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AMMONIA

**PENNSYLVANIA SALT
MANUFACTURING CO. OF WASHINGTON
Chemicals
TACOMA, WASHINGTON**



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"Washington Pulp" Celebrates Twentieth Anniversary

Two-day Open House attended by more than 2,100 people.
Service pins awarded to 70 men at banquet November 7th.

“WASHINGTON PULP” celebrated its twentieth anniversary this month with a two-day open house for the people of Port Angeles and vicinity and climaxed the celebration with a banquet Thursday evening, November 7th, at which 70 service pins were awarded.

No one in Port Angeles has ever called the big newsprint mill, now turning out more than 350 tons daily, by any name other than “Washington Pulp.” On the paychecks that have contributed millions of dollars to Port Angeles business life in these twenty years and helped the city double in population, the official name is Washington Pulp & Paper Corporation, Division of Crown Zellerbach Corporation.

Of the 70 men who received service pins from President J. D. Zellerbach at the banquet, 20 were awarded 20-year pins, having served with the mill since it began operations. The 20-year men are: George Cowling, Leon L. Dupuis, William J. Edwards, James M. Hickey, Charles Hudson, James J. Jackson, A. George Johns, Walter F. LaFerman, Paul J. Lamoureaux, Philip B. Morio.

George O. Ostenson, Otto A. Petit, Dan B. Provo, Claude Rivetts, Arthur A. Severe, John Somers, Charles L. Spicer, Leslie A. Tobias, Edward H. Vicary, John F. Webster, and a pin was given posthumously to Clarence Williamson whose death occurred recently. Manager Raymond A. Dupuis was instructed by Mr. Zellerbach to present the pin to Mrs. Williamson.

The following nineteen men received pins for 15 years of service to “Washington Pulp”: Clyde H. Basom, Lloyd Buchholz, Andrea Casilio, George R. Davison, Alfred DeFrang, Martin J. Fey, Marion Green, Edward Hanify.

Robert W. Huff, Cecil T. Huycke, Harry M. Kochenek, Ryan Miller, William C. Murphy, Wesley B. Perkins, Roscoe L. Post, John E. Sullivan, Guy K. Watson, Lewis A. Waugaman and Bert S. Webb.

Ten-year service pins were given to: Alvin V. Anderson, Earl M. Baker, Keith C. Brown, Ersilio Di

Cola, Raymond A. Dupuis, Sidney A. Hoare, Rufus R. Kidd, Larry P. McDonald, Robert M. Rant, Chester J. Vincent, Howard W. Wright.

Five-year pins were received by: John J. Baker, Oscar C. Bower, Wilson W. Brown, Kenneth W. DeFrang, Kermit P. Goodman, Coy C. Grall, Clifton S. Green, John M. King, Allen S. Koch.

Ernest E. Kohler, John D. La Belle, Harold Lamb, Carl E. Nelson, Leo C. Opitz, Raymond J. Taylor, Jens S. Thomassen, William J. Ticehurst, Arthur L. Tobias.

Birthday Party

“Washington Pulp’s” twentieth birthday party was held at the Elk’s Temple and the Naval Lodge of Elks provided the vaudeville entertainment to honor the men receiving service pins. William D. Welsh, for many years editor of the Port Angeles Evening News and now an executive with the Crown Zellerbach and Rayonier Incorporated, acted as toastmaster and kept the men chuckling with his wit.

Raymond A. Dupuis, resident manager of the Washington Pulp & Paper Corporation, in his welcoming talk, gave praise to the men who handled the open house arrangements. He said that the men and the company appreciated the interest shown by more than 2,100 citizens in visiting the mill during the open house.

Mayor of Port Angeles, Harry H. Beetle, told of the community’s appreciation of the payroll provided these twenty years by the mill. He said the employees were active in all phases of community life and that the corporation was always willing to cooperate for the best interests of the city.

Toastmaster Billy Welsh told several anecdotes of the early days of the mill. The first time I. Zellerbach came to Port Angeles, he said, he went to the Merchants’ Hotel with the late Marvin Higgins. They registered but did not go to their rooms until late at night. Mr. Zellerbach couldn’t find a window in his and after a thorough search discovered a trap door in the ceiling which opened to admit air.



FATHER and SON RECEIVE SERVICE PINS . . . LEON L. DUPUIS, left, Superintendent of "Washington Pulp" since the mill started 20 years ago, being congratulated by J. D. ZELLERBACH, President of the Crown Zellerbach Corporation, while his son, RAYMOND A. DUPUIS, Resident Manager of "Washington Pulp," who received his 10-year service pin, looks on with approval.

Thomas T. Aldwell, Port Angeles pioneer, spoke on, "Before the Mill Came." His interesting talk recounted the efforts of himself and others in Port Angeles to develop the water power of the Elwha which resulted in the construction of the Olympic Power Company, and the subsequent work to obtain an industry to use a major part of the electric power produced. The Whalen interests decided to build a mill on Ediz Hook as a result of the efforts of the citizens of the town and got as far as purchasing a paper machine. Financial reverses caused them to drop the idea and in 1919 Edward M. Mills and I. Zellerbach decided to take over the Whalen site and machine and construct a newsprint mill.

Mr. Aldwell told of Mr. Mill's interest in the Peninsula from their first talk in Chicago and of his help in building the power plant and later on the paper mill. He stated that the executive ability of the men in the Crown Zellerbach Corporation coupled with the technical skill of the operators has made the "Washington Pulp" newsprint mill an outstanding producer.

For his assistance in bringing the newsprint plant to Port Angeles Mr. Aldwell was awarded a 20-year service pin by J. D. Zellerbach, president of the Crown Zellerbach Corporation.

Albert Bankus Gives Talk

● Albert Bankus, vice-president of Crown Zellerbach Corporation, gave a short talk on "Newsprint's Part." The 20-year men, said Mr. Bankus, have been his fellow workers for many years and he has enjoyed the association. He congratulated them, Ray Dupuis, manager, and his father, Leon Dupuis, superintendent, on the excellent condition of the mill. For the open house, said Mr. Bankus, it was in "super tip-top shape."

A clean, orderly mill, declared Mr. Bankus, is the physical evidence of a well run plant.

There is a close relationship between newsprint and democracy

said Mr. Bankus. In 1939 the newsprint consumption of the world was 7,792,000 tons and most of this was consumed in the democratic countries. It would take "Washington Pulp" but one hundred days to produce enough newsprint to supply the 350,000,000 people of British India, or the same time to supply China.

But it requires the output of 28 mills the size of "Washington Pulp" running every day of the year, Mr. Bankus pointed out, to produce enough newsprint to supply the 130,000,000 people in the United States where the per capita newsprint consumption is 54½ pounds. New Zealand has a per capita con-

"WASHINGTON PULP" STATISTICS

Number men employed—435.

Payroll—\$835,000 annually.

Timber used—52,000,000 board feet annually.

Species of Timber—Hemlock, white fir and spruce.

Water used—Four billion gallons annually.

Water filtered—Nine million gallons daily.

Steam generated—1,120,000,000 pounds annually.

Power used—175 million kilowatt hours annually.

Materials purchased (aside from logs and machinery)—\$670,000 annually.

Daily tonnage of newsprint—350 tons.

Number of men in Sail River logging camp—230.

Payroll of logging camp—\$330,000 annually.

Where shipped—To 42 weekly and daily newspapers, mostly in western states.

sumption of 44½ pounds; Australia, 60 pounds; Canada, 45 pounds; and, Great Britain, 53 pounds.

In totalitarian countries the consumption of newsprint is very low. The original territory of Germany before the war, with 62,500,000 people had a per capita newsprint consumption of but 9 pounds. Italy with 42,000,000 people consumes but 3 pounds per person.

Newsprint and democracy are partners, Mr. Bankus emphasized. In dictator nations minorities, business and unions have no voice, for the press is controlled. If the people of these nations were free there would be a tremendous increase in the consumption of newsprint.

He told the service pin winners that they had labored long and well. It was a point of pride with the company that so many men had worked so long for "Washington Pulp." The newer men, Mr. Bankus told the older ones, look to them for instructions on how to do the job better and to do it more safely. The company needs the energy and initiative of youth but it also needs the care, caution and knowledge of age. The combination makes for business success.

I. Zellerbach Tells of Growth

• I. Zellerbach, chairman of the Executive Committee of Crown Zellerbach Corporation and one of the founders of "Washington Pulp," outlined the development of the Crown Zellerbach Corporation,

pointing out the reasons for its success. His 53 years in the industry, said Mr. Zellerbach, have seemed very short because he has enjoyed his work. From the time he joined his father and brothers at the age of 11 years in the paper business of A. Zellerbach & Sons, Mr. Zellerbach said he has been happy in his work, making fun out of it. His brothers and his father did likewise and this fact, he said, was very important to the success of the organization. It was important then and it is equally important now, he emphasized.

A corporation is just like a family, made up of young and old. When the individuals are happy together, working together for a common purpose, they are successful. If they fall out they are unhappy and fail in their aim.

Crown Zellerbach, Rayonier and Fibreboard have some 20,000 stockholders and 14,000 employees. The stockholders depend upon the companies' success as does the employee. He reminded his audience that the last money made goes to the stockholders and the first lost is theirs.

J. D. Zellerbach, son of I. Zellerbach, and president of the Crown Zellerbach Corporation, presented the 70 service pins, shaking each man by the hand. It is always a pleasure to be in Port Angeles, said Mr. Zellerbach, who added he hoped to come back regularly to visit with the men in the three mills.

The response for the service pin men was given by A. George Johns, a 20-year veteran at "Washington Pulp."

"I am proud to be numbered tonight with the 20-year men who helped to build the good old 'Washington Pulp,' just twenty years ago," said Mr. Johns. "It is a pleasure to represent these men on this program, and to express our gratitude on receiving our 20-year service pins from the hands of our president, J. D. Zellerbach, who certainly gave us a man's handshake. We are also glad to see his father, M. I. Zellerbach here tonight. I recall he was around that day, 20 years ago, when we made the first newsprint run at the mill. He and Mr. Mills were highly pleased with the paper. As I recall, it looked more like straw paper than newsprint, but it was the first paper made in the new mill, and they were proud of it.

"You know I am a beater foreman. I know that when we turn out good stock from the beaters there is almost a one hundred percent chance that good paper will come out of the other end of the paper machine. So with management and men. If we put good working conditions fair play and honest effort into the beaters, good relations will result. We'll do our part. You gentlemen in San Francisco rustle up the newsprint orders; we'll turn 'em out. And by working



COMPARE this picture with the photograph on the cover . . . In twenty years "Washington Pulp" has grown and increased production of newsprint from 55 tons to over 350 tons daily . . . Here is shown the start of construction on June 28, 1920.



VETERANS of TWENTY YEARS with "WASHINGTON PULP" . . . Included in this picture are: George Cowling, Leon L. Dupuis, William J. Edwards, James M. Hickey, Charles Hudson, James J. Jackson, A. George Johns, Walter F. Lafeman, Paul J. Lamoureux, Philip B. Morio, George O. Ostenson, Otto A. Petit, Dan B. Provo, Claude Rivetts, Arthur A. Severe, John Somers, Charles L. Spicer, Leslie A. Tobias, Edward H. Vicary, John F. Webster.

together we can build a greater Port Angeles. And we do want a greater Port Angeles, because nearly every man in the 'Washington Pulp' owns his own home here."

Guests

• At the speakers' table were: Albert Bankus, vice-president of Crown Zellerbach Corporation; Ray Dupuis, resident manager of "Washington Pulp"; Thomas T. Aldwell, Port Angeles pioneer; I. Zellerbach, chairman, Executive Committee, Crown Zellerbach Corporation; William D. Welsh, executive, Crown Zellerbach Corporation and Rayonier Incorporated; J. D. Zellerbach, president of Crown Zellerbach Corporation, executive vice-president, Rayonier Incorporated and chairman of the board of Fibreboard Products, Inc.; Harry H. Beetle, mayor of Port Angeles; A. George Johns, "Washington Pulp"; W. L. Raymond, vice-president, Rayonier Incorporated and an alumnus of "Washington Pulp"; and, John Sherman, vice-president of the In-

ternational Brotherhood of Pulp, Sulphite & Paper Mill Workers.

Among the other guests were: Otto R. Hartwig, M. B. Houston, Holland Houston, Phil Henderson, John Sullivan, W. S. Lucey, E. W. Erickson, A. W. Berggren, Robert Bundy, George Cropper, M. N. Carnine, Bud Ellis, and Harold Goodrich from Neah Bay, Forest Ott, president of the "Washington Pulp" local of the International Brotherhood of Paper Makers; Ernest Wagner, president of the International Brotherhood of Pulp, Sulphite & Paper Mill Workers local; Joe Dupuis, Pat Cannon, Lyall Tracy, D. E. Scott.

Art Bogue, Wilbur Lowndes, Charles Webster, Jack Henson, Clayton Hay, Herb Molchior, Charles Lind, Lyle Bean, T. F. Trumbull, Benjamin N. Phillips, Roy S. Jensen, E. R. Horton, Hayes Evans, Harry LeGear, Vernon Robinson, John Reiners, Matthew Rauch, O. S. Cauvel, Thomas B. Hargreaves, Leslie Warwick, Wil-

liam Locke, W. L. Kidd, Raymond Austin, Howard Graham, H. L. Day, H. K. Roberts, A. J. Hooper, Kenneth Roberts, James Phillips and E. P. Read.

Fathers and Sons

• Five sets of fathers and sons working for "Washington Pulp" were introduced by Mr. Welsh. There were: Leslie and Arthur Tobias; Marion and Clifton Green; Alfred and Kenneth DeFrang; Leon and Ray Dupuis; and, I. and J. D. Zellerbach.

The Open House

• "I had no idea there was so much to this paper mill!"

"That was the typical remark of visitors as they finished the open house tour through the Washington Pulp & Paper Company mill on November 5th and 6th," says the Port Angeles Evening News.

"And may we add that it was a very pertinent remark, too, for it is a fact that relatively few residents of this country, outside of those connected with the mills, have realized the large extent, complexity, and massiveness of the machinery and equipment in a large pulp and paper mill.



THE FIFTEEN YEAR SERVICE PIN WINNERS are in this picture . . . Clyde H. Basom, Lloyd Bucholz, Andrea Casilo, George R. Davidson, Alfred DeFrang, Martin J. Fey, Marion Green, Edward Hanify, Robert W. Huff, Cecil T. Huycke, Harry M. Kochanek, Ryan Miller, William C. Murphy, Wesley B. Perkins, Roscoe L. Post, John E. Sullivan, Guy K. Watson, Lewis A. Waugaman, Bert S. Webb.



The TEN YEAR SERVICE PIN was awarded to these men . . . Alvin V. Anderson, Earl M. Baker, Keith C. Brown, Ersilio DiCola, Sidney A. Hoare, Raymond A. Dupuis, Robert M. Rant, Chester J. Vincent, Howard W. Wright, Rufus R. Kidd, Larry P. McDonald.

"We believe both the community and the mills alike benefit from this better understanding of the industrial processes obtained through first hand observation."

More than 2,100 people took advantage of the invitation extended by resident manager Raymond A. Dupuis to visit the big newsprint mill on Ediz Hook which produces more than 350 tons per day. The visitors were taken on an hour's tour of the mill by a corps of fifty competent guides. Each was given a copy of "Crown-Z News," a four-page paper telling the story of the mill, its establishment and something about the industry.

Quoting from the historical article in the News:

"Fifteen squatter families were shooed away and hundreds of Indian bones disturbed just twenty years ago last spring when ground was broken and excavations made for foundations of the Washington Pulp & Paper Corporation's newsprint mill on the base of Ediz Hook Spit. Old

timers tell of at least one Indian massacre on the site of the mill in the old days when the Clallams and the Chimseans were enemies, but one of the Kuppler brothers who constructed first units of the mill thought for a time there might be a 1920 massacre as one irate woman squatter challenged his right to remove her shanty until shown the company actually owned the property. She was of the opinion she was squatting on government property.

"Twenty year files of the Evening News chronicle the advent and progress of the mill. While rumors had traveled thick and fast about big companies buying the Whalen paper machinery which had been stored on Ediz Hook, it was on January 14, 1920, that a headline, "Work on New Paper Mill to Start Soon; Officials Are Here," was given prominence. The article said: "It was stated late this afternoon from authoritative sources that the Washington Pulp & Paper Company will let the contract

for the construction of their giant pulp and paper mill here to the contractor who can guarantee the best construction in the shortest time possible. Mr. E. M. Mills, of Peabody-Houghtelling Company, V. D. Simons, construction engineer, George F. Whalen, J. F. Carroll and F. D. Nims were on the ground today."

"The next edition of the paper carried an imploring editorial for people to build. "Where Will We House All the Newcomers?" was the headline.

"On January 26 it was announced Chris Kuppler's Sons had been awarded the contract for the first four buildings and Owens Brothers the contract for pile driving. The next day Dick Owens announced he would "have a crew of 30 men at work in a short time."

"Then, on January 19, came a front page interview in the News with M. R. Higgins, of the Zellerbach Paper Company of San Francisco, who said of the new paper mill: "This is no prospect,



FIVE YEAR SERVICE PINS went to the following men . . . John J. Baker, Oscar C. Bower, Wilson W. Brown, Kenneth W. DeFrang, Kermit P. Goodman, Coy C. Grall, Clifton S. Green, John M. King, Allen S. Koch, Ernest E. Kohler, John D. LaBelle, Harold Lamb, Carl E. Nelson, Leo C. Opitz, Raymond J. Taylor, Jens S. Thomassen, William J. Tiechurst, Arthur L. Tobias.

PACIFIC PULP & PAPER INDUSTRY

this is a fact." The same article told of the resignation of E. M. Mills from Peabody-Houghtelling.

"On January 30, 1920, William D. Welsh, then editor of the News, currently with Crown Zellerbach Corporation, wrote a feature story about moving the fifteen squatters from the site of the new construction. In the same paper Kupplers announced construction of a spur supply track and arrangements being made to hire 150 men.

"On Monday, February 2, 1920, a courthouse story related that 'deeds were filed today for the transfer of lands from R. D. Hubbard to the Washington Pulp & Paper Corporation and also of the building from James Whalen to the Washington Pulp & Paper Corporation.'

The building referred to housed the papermill machinery shipped here by the Whalens from British Columbia.

"Different stages of construction and installation progress were recorded faithfully in the News. Then on November 18, 1920, the waterfront perked up with the announcement that steamers of the Pacific Steamship Company would soon begin taking cargo from the Washington Pulp & Paper mill.

"Finally, on December 14, 1920, there appeared these headlines: 'OFFICIALS PLEASED WITH LOCAL PLANT WHICH WAS CONSTRUCTED IN RECORD TIME; "FINEST PAPER PLANT IN THE COUNTRY," DECLARAS MR. ZELLERBACH FOLLOWING INSPECTION TRIP LAST NIGHT WHEN PAPER MACHINE

TURNED OUT FINISHED PRODUCT.'

"The article continues:

"Standard newsprint paper, two reels of it, weighing approximately 3,000 pounds each, was turned out last night at the plant of the Washington Pulp & Paper Corporation in their mill at the head of Port Angeles bay. Following a few days of adjustments the plant will be turning out newsprint on their orders, the output being 55 tons per day.

"Officials of the Washington Pulp & Paper Company witnessing the event of the mill's first product were: Mr. I. Zellerbach and M. R. Higgins of Zellerbach Paper Company, of San Francisco; E. M. Mills and Mr. Simonds.

"Mr. Howarth, president of the Everett Pulp & Paper Mill and Mr. Augustus Johnson, secretary of the same organization, with headquarters in San Francisco, were guests of Mr. Zellerbach on the trip here.

"Asked whether the officials were satisfied with the performance of the Port Angeles plant, Mr. I. Zellerbach stated that he certainly was—that it was one of the finest paper mills in the United States and was a credit to the city and the zeal of those men whose untiring energy made it possible for the plant to be in operation ten months after the first pile was driven. Mr. Zellerbach especially mentioned E. M. Mills as being due for credit, he having entire charge of the operations."

Exhibits

- The men of "Washington Pulp" arranged eight exhibits for the visitors, showing the raw materials and equipment used in the production of newsprint, also the emphasis placed upon safety.

One exhibit showed a section from a 500-year-old spruce tree that began growing in the Hoh River valley in the year 1440 when Johann Gutenberg perfected the first movable type.

The exhibits added much interest to the tour of the mill helping to explain the processes and the problems of the pulp and paper makers.

Luncheon

- On November 7th the Port Angeles Chamber of Commerce gave a luncheon in honor of the visiting Crown Zellerbach executives and brief talks were given by local citizens who expressed their pleasure at the success of the local newsprint mill and their appreciation of what its steady payroll has done for the city of Port Angeles. I. Zellerbach, J. D. Zellerbach and Albert Bankus of the Crown Zellerbach Corporation spoke at the luncheon.

Open House Committee

- Arrangements for the open house at the big mill were in charge of the following committee: William C. Adams, Raymond Austin, George Hanson, Robert Huff, A. George Johns, Winston Kidd, John Monser, Paul Neer, Arthur Severe, Brooks Payne, John Venables, Jack Webster, Thomas Hargreaves, Charles Hudson, Glengarry King and E. P. Read.

Crown Zellerbach Gives Fishermen Clubhouse Site

- Headquarters of the famed Port Angeles, Washington, Salmon Derby in future years will be located on a site given to the Port Angeles Salmon Club by Crown Zellerbach Corporation.



EXHIBITS at "WASHINGTON PULP'S" OPEN HOUSE . . . At the top, some of the equipment used and products of the sulphite pulp mill . . . Center, the First Aid equipment . . . Bottom, the Groundwood mill display of equipment and product.

J. D. Zellerbach, company president, announced at Port Angeles November 7 that a portion of Crown Zellerbach's leased property on Ediz Hook would be turned over to the community fishing organization for a clubhouse and boat haven. This was to be done, he said, on the recommendation of R. A. Dupuis, resident manager of the company's Port Angeles newsprint mill.

Mr. Zellerbach's announcement came at a Port Angeles Chamber of Commerce luncheon honoring him, his father, I. Zellerbach, chairman of the board, and A. Bankus, vice president, and other officials of Crown Zellerbach and affiliated companies.

The Port Angeles Salmon Club, a non-profit community organization with a membership of 2,500 or more annually, has conducted its fishing contest every summer since 1934. Headquarters have been at a clubhouse in a U. S. Navy reservation at the point of Ediz Hook, the site having been leased temporarily by the Navy to the Izaak Walton League and the clubhouse sub-let to the Salmon Club. Due to national defense preparations, the Walton League has been requested to remove the clubhouse, so the Salmon Club has found it necessary to set up new headquarters.

Vocational Classes Held Again This Year in Longview

• Vocational classes of the pulp and paper industry of Longview, Washington, were started October 29th, the opening night of the 1940-41 school year. Two classes in this group are meeting on Tuesday nights at the R. A. Long high school from 8 to 10 p. m.

One of the courses offered the men of the industry is a General Survey of the pulp and paper field covering the following topics: wood and water, pulping (sulphite, kraft, soda), ground wood and screening, pulp bleaching, hydraulics (pumps, valves, fittings), steam and electricity, beating, jordaning, refining, loading, dyeing, sizing, paper machines, paper finishing, converting, coating, pulp and paper testing. This survey course is conducted by Leslie L. Anderson, shift superintendent, Longview Mill, Pulp Division Weyerhaeuser Timber Co.

Sulphite Pulping is the advance course available to the men who have already completed the general survey course. George H. McGregor, superintendent, Longview Mill, Pulp Division Weyerhaeuser Timber Co., is coordinator of the advanced class. The topics covered in this group are: wood preparation, water, acid making, cooking, blow pits, ripples, screenings, bleaching, pulp drying, steam and electricity, hydraulics and pumping for sulphite.

An advisory committee is made up of two representatives from each of the pulp and paper mills in Longview and the Vocation Supervisor, J. R. Erickson. The industrial men on the committee are: E. P. Wood and J. H. Handley, Longview Mill, Pulp Division Weyerhaeuser Timber Co.; Carl Fahlstrom and C. E. Flander, Longview Fibre Company; Arthur C. Zimmerman and A. E. Maahs, Pacific Straw Paper & Board Company.

Improvements at Carthage Mill

• The National Paper Products Division of Crown Zellerbach Corporation is making extensive improvements to its mill at Carthage, New York.

A new bleach plant is to be constructed adjacent to the present grinder room which will have a capacity to bleach thirty tons of pulp daily and will be modern in every respect.

A rebuilt and modernized paper machine is being installed to produce 81-inch rolls of facial tissue and will have a capacity of 2,000 tons annually. This paper machine will produce facial tissue exclusively thus allowing the present paper machines to manufacture a greater

amount of the standard products. The additional machine is being installed in the former converting plant building adjacent to the machine room.

Grant Geisinger, formerly of the Port Townsend mill, is the engineer in charge of the improvement program.

Pacific Straw Installs

Cameron Rewinder

• A new 84-inch rewinder, built by the Cameron Machine Co., is to be installed in the Pacific Straw Paper & Board Co. mill at Longview. This new unit will be in operation about the first of the year.

The Cameron Machine Company of Rochester, N. Y., is represented by the Pacific Coast Supply Company of Portland, Seattle and San Francisco.



At the top is the Sawmill's display of saws, filing equipment and some of the "troublemakers," the hard substances frequently found in the logs, such as rocks, nails and old insulators from telephone lines around which the tree has grown . . . In the center, a display of some of the products of the Crown Zellerbach Corporation . . . Bottom, the 500-year old spruce log . . . This tree started in 1440, the year that Gutenberg invented movable type.

Superintendents Will Meet In Longview, December 6 and 7th

● The Pacific Coast Division of the American Pulp & Paper Mill Superintendents Association will hold its semi-annual meeting Friday evening, December 6th, and all day Saturday, December 7th. The place will be the Hotel Monticello, Longview, Washington.

Anton Siebers, chairman of the Pacific Coast Division and paper mill superintendent of the Longview Fibre Company, announces that registration will start Friday afternoon and visits to the three mills are being arranged.

Invitations to visit the mills have been extended by R. S. Wertheimer, resident manager of the Longview Fibre Company, whose new No. 5 fourdrinier paper and board machine will be in operation; W. Norman Kelly, manager, Longview Mill, Pulp Division Weyerhaeuser Timber Company; and by Arthur Zimmerman, manager of the Pacific Straw Paper & Board Company.

No tournament is being planned but arrangements will be made for those who desire to play golf on Friday afternoon.

At 8 p. m. on Friday evening the regular get-together will be staged and the balance of the evening devoted to fun.

Saturday's Program

● Saturday will be a busy day, according to chairman Siebers, starting out with breakfast at 8 a. m. Zana A. Wise of Portland, the experienced breakfast toastmaster, will preside and put on a program guaranteed to wake up everyone and put them in good spirits for the business meeting at 9:15.

Two papers will be presented at the morning session. Members will be notified by mail as to the subjects to be discussed. They were not available at the time of going to press.

At noon there will be a luncheon to which the ladies are invited. H. A. "Gob" DesMarais, past secretary-treasurer of the Pacific Coast Division and Pacific Coast Manager of the General Dyestuff Corporation, will act as toastmaster.

Robert B. Wolf, manager, Pulp Division Weyerhaeuser Timber Company, will speak.

At 2:15 p. m. the Superintendents Round Table will start off with Niles Anderson, general superin-

tendent of the St. Regis Kraft Division of the St. Regis Paper Company, Tacoma, and vice chairman of the Pacific Coast Division; and Merrill Norwood, superintendent of the Columbia River Paper Mills, Vancouver, Washington, in charge. Questions for the round table should be sent to Mr. Anderson in Tacoma.

For the ladies, Mrs. Carl Fahlstrom, as chairman of the ladies' committee, is planning a bridge party on Saturday afternoon. Assisting her are Mrs. George H. McGregor and Mrs. Preston Varney.

At 6 p. m. a reception for the retiring offices will be held preceding dinner. From 9 o'clock until everyone is tired out there will be dancing. Dress is to be informal.

New officers for 1941 will be elected at the morning session on Saturday.

Reservations should be sent to the Monticello Hotel in Longview or to A. S. Quinn, 1201 Textile Tower, Seattle.

Crown Zellerbach Men To Meet in Seattle

● The Crown Zellerbach Corporation is holding a meeting of technical men and superintendents November 15th and 16th at the Olympic Hotel in Seattle.

J. A. Harris, paper mill superintendent of the West Linn mill, is acting as chairman. Howard Graham, of the central technical department at Camas, will be the vice-chairman.

Norman W. Wilson Elected President of Hammermill

● Norman W. Wilson, first vice president and general manager of the Hammermill Paper Company of Erie, Pa., since 1929, was recently elected president of the company to succeed the late president and founder, Ernst R. Behrend.

The election of Mr. Wilson to the presidency of Hammermill has met with the approval of employees, community and customers.

Starting in 1901 as a Finishing Department worker and mail boy at Hammermill, Hammermill's new president has held many posts within the organization and has long been active in shaping policies of the company. From office and errand boy, Norman W. Wilson was graduated to jobs with the paymaster, the mill superintendent, the billing clerk and many another. He was the company's first traffic manager.

In 1912 Mr. Wilson became assistant manager of sales. Two years later he was elected a vice president and named manager of sales. This was during the

early years of Hammermill Bond, and to sales manager Wilson went much of the credit for successfully introducing a new line and a new merchandising plan.

Mr. Wilson became assistant general manager in 1919, and first vice president and general manager in 1929.

Prominent throughout the paper industry, Hammermill's new chief executive is a former president of the American Paper and Pulp Association, and is now a vice-president of that organization and a member of its executive committee. He is a past president of the Writing Paper Manufacturers' Association, and is now regional director in the Middle Atlantic States for the United States Pulp Producers' Association.

In addition to these duties, Mr. Wilson is president of Grays Harbor Pulp and Paper Company, and a director of both Rayonier Incorporated and the United States Envelope Company. Rayonier is the world's largest producer of pulp for rayon, and the latter is the nation's biggest maker of envelopes.

In the community, Hammermill's new president is a member of the Pennsylvania Parks and Harbor Commission, a director of First National Bank, a director of Erie County Electric Company, and a member of the Community Chest board of directors.

Donald S. Leslie, who has been a vice president and assistant general manager, was named first vice president by the board of directors. He will continue in his post of assistant general manager. At Hammermill twelve years, Mr. Leslie early became assistant sales manager and seven years ago was elected a vice president and assistant general manager. He is a member of the board of directors of the Grays Harbor Pulp & Paper Company.



NORMAN W. WILSON, President, Hammermill Paper Co. and Grays Harbor Pulp & Paper Co.

Sidney Roofing Expanding Production

● Sidney Roofing & Paper Company is carrying out a major expansion program to increase production at the Victoria plant by about 75 per cent, or by 25 tons a day. Present production is about 33 tons daily of various types of roofing material.

A 74-inch machine for production of boxboard and roofing felt assembled from units purchased in eastern Canada recently by President R. W. Mayhew is being installed, together with the usual equipment of beaters and other necessary facilities. The machine is not a new one.

Most of the present financial outlay is for the 235 by 50-foot building which is being built to house the machinery. The building will have concrete floors and steel trussed roof. Creosoted piles are being used on the waterside of the building which will face on Victoria inner harbor and be accessible to shipping.

Parfitt Brothers are contractors for the job, and J. Graham Johnson is the architect.

R. W. Mayhew, president, is now in Ottawa attending the first war session of the Canadian parliament of which he is one of the British Columbia members.

Bartram Expanding Bag Production

● Bartram Paper Products, Ltd., Vancouver, B. C., has completed an expansion project that will enable it to take care of all paper bag requirements in British Columbia, according to President C. A. Bartram.

A new three-color press has been installed, along with two specialty machines. Cost of the new machinery was about \$26,000.

The company's products now include kraft, grocery, glassine and cellophane bags.

Domestic business has been very good in recent months, Mr. Bartram reports, but the company has taken a heavy loss on exports as the war had disrupted business with Central and South America.

So far as overseas trade is concerned, the company is concentrating on British Empire markets.

Westminster Report Shows Progress

● Sales of Westminster Paper Company at New Westminster, B. C., have been well maintained this year, according to President J. J. Herb, and they will be tempered only by increased wartime taxation the effects of which in detail have not yet been determined.

Retirement of the company's funded debt with the payment of the last payment last spring with the consequent elimination of fixed charges is another factor tending to maintain net profits. In the year ended January 31, 1940, it was necessary to provide \$6,889 for interest on debentures.

Gross sales last year were reported at \$1,208,506 compared with \$1,036,542 the previous year.

During the past decade the company has made a consistent record in sales and profits, making it possible to reduce the funded debt while at the same time expending substantial amounts on plant expansion.

During the period when \$300,000 of the original debenture issue was being gradually whittled down, Westminster Paper Company spent close to \$250,000 in carrying out various improvements to the plant, most of which resulted in not only improving the quality of the production but in increasing capacity and diversifying the company's output.

The debentures were finally redeemed a full ten years before the date originally set for their maturity. During the same period the position of working capital was steadily improved. At January 31st, the close of the last fiscal year, prior to the calling of the remaining \$94,500 in debentures at April 1, working capital was shown at \$268,891 against \$167,182 a year previously.

When the company was getting back on its feet ten years ago with the plant rebuilt after the disastrous fire of 1929 the current and working assets were reported at \$77,000 on July 31, 1930.

From this comparison it will be seen that after spending some \$250,000 on plant improvements and additions in the ten years after redeeming the \$300,000 debenture issue Westminster Paper Company has entered upon its debt-free career with a working capital more than double the figure of a decade ago.

St. Helens Producing Pulp for Sale

● The St. Helens Pulp & Paper Co., St. Helens, Oregon, has recently installed a Fidalgo pulp dryer of 25 to 30 tons capacity to dry the excess of sulphate pulp over the amount required by the paper machines. The dried, shredded pulp is being sold to paper mills.

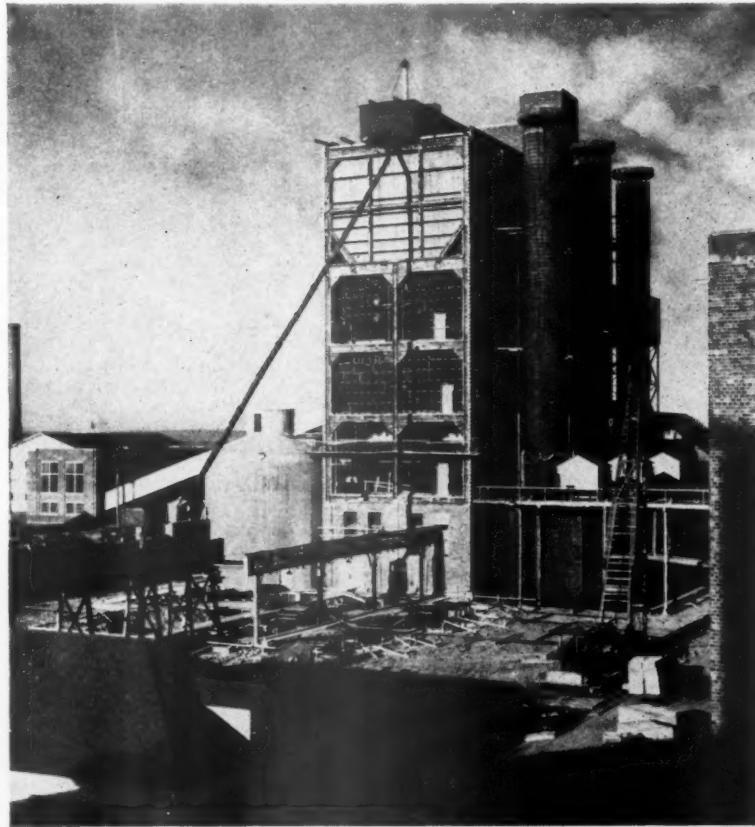
Triplett to Serve Year in the Army

● Cecil L. Triplett of the Technical Department, Hawley Pulp & Paper Co., went to San Francisco November 1st for one year's active duty in the army. He is in the Chemical Warfare Service Reserve, Arm and Service assignment group of the Procurement Division.

Triplett was the winner of the 1940 Shibley Award of the Pacific Section of TAPPI.

E. M. Mills on Eastern Trip

● E. M. Mills, president of Rayonier Incorporated, left his San Francisco office last month for an extended business trip to the East Coast.



CONSTRUCTION of the new addition to the PUGET SOUND PULP & TIMBER COMPANY'S unbleached sulphite pulp mill at Bellingham, Washington, is moving along on schedule . . . The new unit, which will add 50% to the mill's capacity included enlargement of the digester building shown here to house two more 18x56-foot digesters . . . Foundations were completed when this picture was taken on November 11th.

Pulp Imports Decline 22.6% in First Nine Months

Exports in first three quarters total 363,892 tons against 78,335 tons in 1939 . . . Exports drop in September.

● Imports of wood pulp in September were limited to two countries, Canada and Finland. The total of 65,534 short tons was 18,086 short tons or 21.6 per cent below the 83,640 short tons imported in August of this year.

The imports from Canada, 63,538 short tons, were down 8,844 tons or 12.2 per cent below the 72,382 tons coming from that country in August.

Imports from Finland, 2,016 tons, were lower by 9,296 or 82.1 per cent than the 11,312 tons arriving from Finland in August.

Canada supplied this country with 18,567 short tons of unbleached sulphite in September against 21,651 tons in August; 21,189 tons of bleached sulphite as compared with 29,519 tons in August; 5,478 tons of unbleached sulphate against 5,322 tons; 4,191 tons of bleached sulphate against 5,434 tons; 13,187 tons of unbleached groundwood against 9,577 tons; and, 926 tons of soda pulp against 845 tons in August.

Finland shipped 1,584 tons of unbleached sulphite pulp in September against 6,714 tons in August; 374 tons of unbleached sulphite as compared with 2,291 tons; and, 58 tons of bleached sulphite against 1,857 tons.

Nine Months' Totals

● Imports of wood pulp for the first nine months of 1940 amounted to 1,015,283 short tons, a decline of 296,736 short tons or 22.6 per cent. For the first eight months of this year the decline was 21 per cent below the same period of 1939.

From Canada imports in the first nine months of 630,818 short tons

were 49.3 per cent higher than the 422,488 short tons imported in the first three quarters of 1939.

Pulp arrivals from overseas in the first nine months of the present year aggregated 384,465 short tons or 505,066 short tons less than the 889,531 short tons imported in the same 1939 period. This was a decline of 56.9 per cent.

Exports Drop In September

● Exports of wood pulp amounted to 32,347 short tons in September compared with 60,379 short tons in August. For the first nine months of 1940 exports totaled 363,892 short tons, an increase of 464 per cent over the 78,335 short tons exported in the same period of 1939.

The drop in September pulp exports was due principally to Great Britain taking but 10,891 short tons against 31,999 short tons in August. Japan took about the same in each month, 9,005 tons in August and 9,280 tons in September.

October exports figures, which will not be available until late in November, are expected to show Great Britain taking no more pulp and probably less than in September. This situation is not due to any lack of desire on the part of the British for pulp but is caused by the employment of available ships for the transportation of materials and finished products considered more essential to the prosecution of the war. Pulp simply has to await its turn and the British mills either operate at less than 20 per cent of capacity or shut down entirely for varying periods.

The unfavorable situation in which the Japanese rayon and staple fiber industries find themselves, with shrinking markets and shortages of coal, water power and chemicals, is expected to be reflected in reduced takings of rayon pulp from Canada and the United States in the final quarter of 1940.

Newspaper Price Fair Clarkson Says

● Testifying at the investigation in Toronto into the tangled financial affairs of Abitibi Power & Paper Company, G. T. Clarkson, the receiver, declared that Canada cannot place the price of newsprint too high for fear of attracting too much competition.

Clarkson told the royal commission conducting the inquiry that the present price of \$50 a ton was about right as it enabled Canadian companies to make a fair profit. He felt that if the proration of tonnage was not operating the price would fall back again to \$40 a ton and the companies would again lose money.

"There is more productive capacity in Canada than the industry justifies," said Clarkson, after giving figures showing that Canada's plant capacity for newsprint, 4,368,000 tons, is the greatest in the world.

High Water Permits Groundwood Operations

● With the rise of the Willamette River at Oregon City from the fall rains the Hawley Pulp & Paper Company started its water-driven wood grinders in mills "A" and "H" November 1. About 85 men were employed for operating the additional units.

It is anticipated both mill "A" and mill "H" will be operated at full capacity for the next seven months, depending upon the water that is available at the mill.

COMPARISON OF WOOD PULP IMPORTS

August and September, 1940

(Tons of 2000 Pounds)

Type of Pulp:	Finland		Norway		Sweden		Canada		All Countries	
	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.	Aug.	Sept.
Mechanical Unbleached									9,557	13,187
Unbleached Sulphite	2,291	374							21,651	18,567
Bleached Sulphite	1,857	58							29,519	21,189
Unbleached Sulphate	6,714	1,584							5,322	5,478
Bleached Sulphate	450								5,434	4,191
Soda									845	926
Total	11,312	2,016							72,382	63,538
Percentage of Change from Previous Month	445%	-82.1%							-13.9%	-12.2%
									-03.2%	-21.6%

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.



"Deer" hunter JERRY ALCORN with a day's bag. Mr. Alcorn, who is Plant Engineer, Pulp Division, Weyerhaeuser Timber Company, Everett, got his buck, as did the other three members of the hunting party, LOUIS WENDT, in charge of instrumentation at Weyerhaeuser's Everett mill; HERBERT PETERSON, in charge of instrumentation for the Pulp Division, Weyerhaeuser Timber Co., Longview; and L. H. WEAR, Pacific Northwest representative, Taylor Instrument Companies, Portland.

Deer Hunters Bring Home the Bucks

● Deer hunters will go a long way, drive all night and pack in twelve miles for a chance to get a shot at a buck. If they get what they go after the privations, the loss of sleep are all worthwhile. If they come back empty-handed it is still worthwhile.

But three Weyerhaeuser Pulp Division men, Gerald F. Alcorn, plant engineer for the Everett mill, Louis Wendt, in charge of instrumentation at Everett, and Herbert Peterson, in charge of instrumentation for the Longview mill, together with L. H. "Vern" Wear, Taylor Instrument Companies, Portland, each brought back a fine buck from a five-day hunting trip.

The four men started out September 20th from Portland and drove deep into southeastern Oregon close to the Nevada line. Parking at a crossroads postoffice called Andrews they packed in twelve miles to an old abandoned settler's cabin in the Steens Mountains.

Two deer were shot the first day. The last day the other two were bagged. The largest was an 8-point buck. In between the deer shooting the jackrabbit population was under fire and the casualties were heavy.

Louis Wendt, Herbert Peterson and Vern Wear have been hunting in the Steens Mountains for several years, but this was Jerry Alcorn's first deer hunting trip.

Personnel Association Holds Meeting in Portland

● The second annual conference of the Pacific Northwest Personnel Management Association met in Portland at the Multnomah Hotel October 9, 10, 11. About 150 members, who are executives, personnel managers, supervisors, and educators sharing a common interest in the study of modern personnel management methods, attended. Three vital purposes were dominant throughout the meetings:

(1) Intensive review and discussion of important developments in the field of industrial relations,

(2) Means to improve industrial relations in the Pacific Northwest during these days of national stress,

(3) Solid value of well-designed and properly-administered policies of personnel management with emphasis on practical programs and procedures.

The first paper of the conference, "Effect of Industrial Relations on Community Progress," was presented by Laurin E. Hinman, Portland General Electric Company, who was general chairman of the 1940 conference.

Entertainment was provided during the opening day's luncheon session by Victor Gault, personnel director of Crown Willamette Paper Company, Division of Crown Zellerbach Corporation, Camas, Washington, and A. M. Isaacs, Conference leader, State department for

vocational education. They presented a skit entitled, "I Want a Job!"

At the afternoon meeting Otto R. Hartwig, social security and safety supervisor, Crown Zellerbach Corporation, took part in the panel discussion of the "Effect of the National Defense Program on Personnel Management and Employment Problems."

The address of the afternoon was given by J. M. Tedford of Crown Zellerbach Corporation. Mr. Tedford's subject was "Job Analysis and Evaluation" on which he is a recognized authority.

Lyle Watts, Regional Forester, United States Forest Service, Portland, was a member of the panel discussing "Business Executives Look at Modern Personnel Management."

During the morning of the closing day Robert B. Wolf, manager of the Pulp Division, Weyerhaeuser Timber Company, delivered an address on "Non-Financial Incentives." Mr. Wolf was one of the men the American Management Association numbered among the nationally-known speakers on their Personnel Management Conference.

Otto R. Hartwig finished the final morning sessions with a presentation of "Choosing Your Employer." He has found that the present trends are not just as in the past. Indications are found to suggest a possibility that employees are to have their "day in court and may some time literally 'choose his employer.'"

IMPORTS OF WOOD PULP INTO THE UNITED STATES

	(Tons of 2,000 pounds)					
	Aug. 1939	Aug. 1940	Sept. 1939	Sept. 1940	1940 Over Aug.	1939 Over Sept.
Finland	29,538	11,312	33,654	2,016	-61.7%	-94%
Norway	7,283	—	4,202	—	—	—
Sweden	66,061	53,724	—	—	—	—
Canada	45,559	72,328	68,356	63,538	+58.7%	-07%
Total (four countries)	148,441	83,640	159,936	65,554	-43.6%	-59%

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

COMPARISON OF WOOD PULP IMPORTS

	(Tons of 2000 Pounds)	
From:	Nine Months 1939	Nine Months 1940
Finland	244,362	80,766
Norway	54,465	17,190
Sweden	536,270	279,770
Other Overseas	54,434	6,739
Total Overseas	889,531	384,465
Canada	422,488	630,818
Total Imports	1,312,019	1,015,283

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

COMPARISON OF WOOD PULP EXPORTS

	(Tons of 2000 Pounds)	
	Nine Months 1939	Nine Months 1940
Rayon and Special Chemical Grades	25,561	88,343
Other Bleached Sulphite	14,463	86,839
Unbleached Sulphite	26,002	55,264
Bleached Sulphite	†	15,161
Unbleached Sulphite	5,567	113,437
All Other	**6,742	*4,848
Total	78,335	363,892

* Includes 4757 tons of soda pulp.

** Includes 2621 tons of soda pulp.

† Included under All Other.

Source: U. S. Department of Commerce, Bureau of Foreign & Domestic Commerce.

Second Dinner Meeting Held in Everett

• The Pacific Section of TAPPI held its second dinner meeting of the 1940-1941 series at the Hotel Monte Cristo in Everett, Washington, on November 12th. Arrangements were in charge of N. W. Coster, past chairman of the Pacific Section and technical director of the Soundview Pulp Company.

Two papers were presented and discussed. L. A. Williams, manager, Everett District, Puget Sound Power & Light Company, spoke on, "Developing Leadership in Supervisory People." E. D. Rich, technical supervisor of the Oregon Pulp & Paper Company, Salem, Oregon, presented a paper on "Cuprammonium Viscosity as a Pulp and Paper Mill Control Test." Both papers are published in this issue.

Chairman of the Pacific Section, Fred A. Olmsted, was delayed on his drive from Camas to Everett by an auto accident. Fortunately neither he nor Mrs. Olmsted were injured and he was able to finish the drive to Everett, arriving after the meeting started. Before he arrived G. S. Brazeau, member of the Executive committee of National TAPPI and manager of the Everett mill, Pulp Division Weyerhaeuser Timber Company, presided.

No dinner meeting will be held in December because of the Superintendents Association meeting at Longview, December 6 and 7th. The next TAPPI dinner meeting is scheduled for Camas, Washington, Tuesday evening, January 7, 1941.

The following men attended the TAPPI dinner meeting in Everett, November 12th:

• O. C. Abbott, Bristol Co., Seattle; Tore Ahlen, Svenska Flatkfabriken, Seattle; Jerry Alcorn, Pulp Division Weyerhaeuser Timber Co., Everett; Fred Armbruster, Dow Chemical Co., Seattle; A. J. Bailey, University of Washington, Seattle; Henry E. Becker, Everett Pulp & Paper Co., Everett; C. H. Belvin, Chromium Corp. of America, Portland; H. K. Benson, University of Washington, Seattle; H. K. Berger, Everett Pulp & Paper Co., Lowell; W. L. Beuschlein, University of Washington, Seattle; Jasper R. Blair, Pulp Division Weyerhaeuser Timber Co., Longview.

G. S. Brazeau, Pulp Division Weyerhaeuser Timber Co., Everett; Jim Brinkley, Jas. Brinkley Co., Seattle; G. H. Cady, University of Washington, Seattle; Ivan Campbell, Puget Sound Pulp & Timber Co., Bellingham; Kenneth Chapman, Pulp Division, Weyerhaeuser Timber Co., Everett; Sidney M. Collier, Puget Sound Pulp & Timber Co., Belling-

ham; N. W. Coster, Soundview Pulp Co., Everett; J. V. B. Cox, Hercules Powder Co., Portland; E. O. Ericson, Puget Sound Pulp & Timber Co., Bellingham; O. E. Fox, Pulp Division, Weyerhaeuser Timber Co., Everett.

J. D. Fraser, Pulp Division, Weyerhaeuser Timber Co., Everett; N. O. Galte-land, St. Regis Paper Co., Kraft Pulp Division, Tacoma; Irving R. Gard, Merrick Scale Mfg. Co., Seattle; A. S. Gerry, Pulp Division, Weyerhaeuser Timber Co., Everett; William R. Gibson, Northwest Filter Co., Seattle; Geo. A. Glad-ding, Soundview Pulp Company, Everett; Alfred Graef, Pulp Division, Weyerhaeuser Timber Co., Everett; Gerald F. Green, Puget Sound Pulp & Timber, Bellingham; Harold G. Griep, Pulp Division, Weyerhaeuser Timber Co., Everett; Devane Hamilton, Pulp Division, Weyerhaeuser Timber Co., Everett; R. N. Hammond, Research Dept., Weyerhaeuser Timber Co., Longview.

• D. W. Harris, C. C. Moore & Co., Engrs., Seattle; Andrew D. Hawley, Pacific Coast Supply Co., Seattle; Raymond P. Hill, Pulp Bleaching Co., Wausau, Wis.; A. B. Hilmo, Pulp Division, Weyerhaeuser Timber Co., Everett; Karl Holt, University of Washington (student), Seattle; Chas. A. Hulsart, C. C. Moore & Co., Seattle; Lester M. Johnson, Pulp Division Weyerhaeuser Timber Co., Everett; R. E. LeRiche, Brown Instrument Co., Seattle; Halvar Lundberg, A. H. Lundberg Co., Seattle; Robert W. Martig, Brown Instrument Co., Portland; Jack Martin, Schorn Paint Mfg. Co., Seattle.

J. H. McCarthy, Soundview Pulp Co., Everett; John J. McNair, Pulp Division, Weyerhaeuser Timber Co., Longview; Robert W. Miller, Pulp Division, Weyerhaeuser Timber Co., Everett; D. C. Morris, James Brinkley Co., Seattle; F. A. Olmsted, Crown Zellerbach Corp., Camas; Adolf Orup, Soundview Pulp Co., Everett; Oscar J. Olson, Soundview Pulp Co., Everett; Paul A. Pittinger, Pulp Division Weyerhaeuser Timber Co., Everett; E. D. Rich, Oregon Pulp & Paper Co., Salem; Carl Ries, Pulp Division, Weyerhaeuser Timber Co., Everett.

Oliver Ronken, Soundview Pulp Co., Everett; H. Radford Russell, Everett Pulp & Paper Co., Lowell; S. A. Salmonson, Soundview Pulp Co., Everett; Walter A. Salmonson, Simonds Worden White Co., Seattle; B. W. Sawyer, Northwest Filter Co., Portland; Geo. E. Schmidt, Penn Salt Mfg. Co. of Wn., Tacoma; Harlan Scott, Pacific Pulp & Paper Industry, Seattle; Fred Shaneman, Penn Salt Mfg. Co. of Wn., Tacoma; J. M. Shedd, Everett Pulp & Paper Co., Everett; Brian L. Shera, Penn Salt Mfg. Co. of Wn., Tacoma; R. E. Simkins, Pulp Division, Weyerhaeuser Timber Co., Everett.

H. N. Simpson, Crown Zellerbach Corp., Port Townsend; M. E. Sorte, Pulp Division Weyerhaeuser Timber Co., Everett; E. E. Stephens, Bumstead-Woolford, Seattle; James B. Symonds, The Sinclair Co., Seattle; H. V. Tartar, University of Washington, Seattle; R. I. Thieme, Soundview Pulp Co., Everett; H. A. Vernet, A. E. Staley Mfg. Co., San

Francisco; G. R. Vernig, Pulp Division, Weyerhaeuser Timber Co., Longview; Edward A. Vohs, Siems, Drake, Puget Sound Co., Everett.

Harold F. Warren, R. E. Chase & Co., Tacoma; L. A. Wendt, Pulp Division, Weyerhaeuser Timber Co., Everett; L. A. Williams, Puget Sound Power & Light Co., Everett; Edward P. Wood, Pulp Division, Weyerhaeuser Timber Co., Longview; R. E. B. Wood, Pulp Division, Weyerhaeuser Timber Co., Everett; O. H. Woolford, Bumstead-Woolford, Seattle.

Roger Egan Battles Storm To Reach Northwest

• Roger Egan of the Bulkley, Dunton Pulp Company, New York, agents for Soundview Pulp Company, Puget Sound Pulp & Timber Company and the St. Regis Kraft Division of the St. Regis Paper Company, is visiting the mills in the Pacific Northwest but he thought for a time he would never survive the difficult journey.

Starting from New York by plane on Sunday morning, November 10th, Roger intended to fly directly to San Francisco, but he reckoned without the Midwest blizzard. Grounded by the storm in Detroit, he caught a fast train to Kalama-zoo, changed to another for Chicago arriving there on Sunday night.

Finding the Stratoliner for San Fran-cisco grounded he went to bed with as-surances of the airline that they would be ready to go in the morning. Arising at 6 a. m. on Monday he went to the airport and by the time he got there the wind had risen to 60 miles per hour. No flight. Back into Chicago he went and caught the Burlington Zephyr for Minneapolis. Unknowingly he was rid-ing into the center of the storm.

Reaching Minneapolis at 3:30 in a howling gale he was asked by Northwest Airlines to wait a few hours. At 9 a. m. they advised him to take the 11:05 train for Seattle. All taxis were stalled by the deep snow drifts and the freezing temperatures. Carrying his two bags he ploughed through drifts sometimes hip-deep the four blocks to the station. Where the snow had blown off the side-walks, reports Roger, the ice was so smooth that the gale would blow him across for his bags acted as sails.

The train, which was in St. Paul, did not reach Minneapolis, across the Mis-sissippi, until 6 a. m., seven hours late, so he spent the night in the station. Boarding the train for the West he dis-covered there was no diner attached. Battling the storm, the train lost 15 minutes every hour. Reaching Fargo, N. D., he left the train and boarded the plane as the weather had cleared. All was fine sailing until reaching Seattle where Boeing Field was found to be covered with fog, so the airliner landed at the Snohomish County airport, south of Everett.

Finally getting into Seattle, Roger wired Mrs. Egan that he had arrived on Wednesday afternoon, then looked at a paper and found it was Tuesday, November 12th. The trip had seemed a day longer.

Mrs. Egan wired back, "Telegram re-ceived. Glad to hear you are safe, but it is Wednesday morning here. Where are you?"

Cuprammonium Viscosity as a Pulp and Paper Mill Control Test

by E. D. RICH*

Viscosity Testing

It has been known for some time that a solution of copper and ammonia would act as a solvent for cellulose. One of the earliest methods of producing rayon and cellulose films was based on this property. There are a number of cuprammonium mills in operation in Europe and at least one mill in the United States.

However the value of this so-called solvent¹ as a test for cellulose quality was not discovered until the experiments of Ost² in 1911. Very little more is reported of the test until after 1920 when it began to be widely adopted as a test for cotton and textiles.

During the latter part of this decade methods of purifying wood pulp for rayon and cellophane manufacture were developed and the viscosity test was introduced in pulp mills as an essential test for these grades of pulp.

Since 1930 the cuprammonium viscosity test has been widely used in pulp and paper mill laboratories in connection with research and special operating studies, but as the testing procedures have been rather complicated and the time required for the test has been at least 20 hours, it has been applied very little as a control test.

Considerable research has been directed towards the development of a rapid method of testing for viscosity and a number of tests have been developed which require less than an hour and still maintain a reasonable accuracy. However, all require special equipment and extreme care during testing.

In 1937 a test was developed in which ammonia was used to break up and swell the fibres before the addition of the cuprammonium solvent³. The pulp dissolves very rapidly (2 minutes or less) and the entire test can be made in less than 15 minutes. Also the equipment necessary for testing has been greatly simplified thus making it possible for untrained men to make tests with an accuracy of 3 per cent. This procedure was used for all test data in this report.

Reports and literature on viscosity testing are rather evasive on its meaning and value. Doree⁴ claims that it is one of the most important means of measuring cellulose quality:

"The variation of the viscosity in cuprammonium is by far the most sensitive diagnostic of change in cellulose. It indicates change even before the tensile strength . . . alters to an extent sufficient for direct measurement. It is obviously closely connected with the structure of the fibre itself. The copper number, which indicates the development of a reducing property, is neither so sensitive nor so reliable a criterion of change as the viscosity . . ."

"The viscosity is not restored to its original value by an alkali boil, and its value therefore reveals initial damage to

*Technical Supervisor, Oregon Pulp & Paper Company, Salem, Oregon. Presented at the Dinner Meeting held by the Pacific Section of TAPPI in Everett, Washington, November 12, 1940.

Abstract

A simplified, rapid method of testing the cuprammonium viscosity of pulp and paper is used for many types of control and investigation in a pulp and paper mill. The test is found to be more satisfactory than bleachability determinations as a guide in blowing digesters for a pulp of uniform quality. It is used throughout the bleaching and papermaking processes to control the degradation of the cellulose and provide data on mill operation; also in the laboratory as a test on finished pulp and paper sheets to determine fibre characteristics.

the cellulose in spite of subsequent alkali treatment . . .

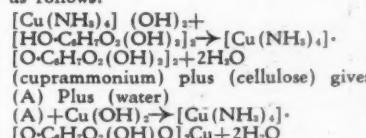
"Despite lack of knowledge as to the precise physical meaning to be assigned to the measurements made, the determination of viscosity has become of great importance in cellulose investigation and technology."

Schorger's⁵ statements are more technically phrased and somewhat more guarded:

"The viscosity of the solution affords a useful means, when stringent precautions are observed, of determining if the cellulose is normal or degraded . . .

"Changes in the viscosity of the solution, attributed to depolymerization of the cellulose molecule, shows that the solvent is not inert and prevents sharp differentiation between celluloses. Ost obtained the highest viscosity for a nitration cotton that had been boiled with dilute caustic soda. The lowest viscosities and easiest solubilities were shown by filter paper and bleached straw cellulose. Sulphite pulp purified for celluloid manufacture showed a viscosity of 10.7%. The viscosity of cotton was reduced from 30.2 to 13.6% by a previous heating at 120 to 125° for 15 hours. Oxy cellulose and hydrocellulose show a low viscosity . . .

"Cellulose forms with Schweizer's reagent (cuprammonium) an alcholate, the hydrogen of the free hydroxyl groups being replaced by copper to give a salt as follows:



According to Hess⁶, the compound $[\text{Cu}(\text{NH}_3)_4] \cdot [\text{C}_6\text{H}_4-\text{O}_2\text{Cu}]$ is formed."

These statements mean very little until the fact is considered that every chemical action, no matter how small, degrades cellulose. Degradation takes place during cooking, bleaching and storage during the pulping process. In the paper mill cellulose is degraded by addition of chemicals to the beater, by the action of

these chemicals during storage in the machine chest and by oxidation as the paper is dried on the machine. The aging of pulp and paper sheets is a process of degradation readily shown by changes in viscosity.

The viscosity test might therefore be compared to an X-ray or "inside picture" of the pulp fibres. It is sufficiently sensitive a test to indicate decreasing quality before the physical tests show it.

Theoretically pure cellulose fibres obtained without any chemical action (assuming that the wood had not degraded) would have the highest quality. From a practical viewpoint a balance must be made between quality and production costs to produce a pulp having only as much quality as is required for the grades of paper being produced. Hence the viscosity test is a constant check on this quality, allowing the production of a more uniform pulp and paper at a lower cost than would otherwise be possible.

Control

The uses of this test for control purposes will be discussed according to the different operations during pulp and paper making where degradation takes place.

Cooking

At the present time most mills blow their digesters for a certain bleachability test. This test is a measure of the amount of lignin and encrusting material left on the fibres and hence gives no indication of the actual quality of the cellulose.

Different species of wood have different amounts of lignin. Also the rate or ease of removal of lignin varies with the species. To a lesser degree this is true of wood of the same species cut from different localities or grown under different conditions. Therefore two pulps having the same bleachability may have widely different viscosities: the first pulp may have required a much more drastic cooking to reach the same bleachability as the second, causing the cellulose of the first pulp to be far more degraded and resulting in low quality paper.

Tests made on numerous cooks prove this to be true. It was found that to obtain the same quality (viscosity) of pulp from white fir as from hemlock it was necessary to blow the digesters at a higher bleachability. Also blowing the white fir cooks at the same bleachability (lower viscosity) resulted in a lower mullein and tear in the finished paper. It has also been observed that hemlock cooks blown to the same bleachability will vary greatly in viscosity and in strength and quality of the finished paper.

"There is no true solvent for cellulose. The various so-called solvents permit the recovery of a modified cellulose only. On dilution of the solvent, gelatinous cellulose usually precipitates." Schorger, "Chemistry of Cellulose and Wood," McGraw-Hill, 1926.

¹ Zeit. angew. chem., 1911, 24, 1892.

² E. D. Rich, "A Quick Viscosity Test for Mill Control," April, 1937 (unpublished report).

³ Chas. Doree, "The Methods of Cellulose Chemistry," D. Van Nostrand, 1933.

⁴ A. W. Schorger, "The Chemistry of Cellulose and Wood," McGraw-Hill, 1926.

⁵ K. Hess et al., Ann., 435, 1923, 1.

Table I
Effect of Caustic on Viscosity Loss

Caustic Used lbs./ton	Per Cent Loss in Viscosity
0	68.9
10.3	54.2
13.7	44.4
17.2	53.4
20.6	57.2
28.6	65.2
43.0	93.8*

*This high loss was attributed to the extra bleach and temperature required by this pulp to obtain the same color in the same time.

FIG. 1-RELATION BETWEEN BLEACHABILITY + STRENGTH

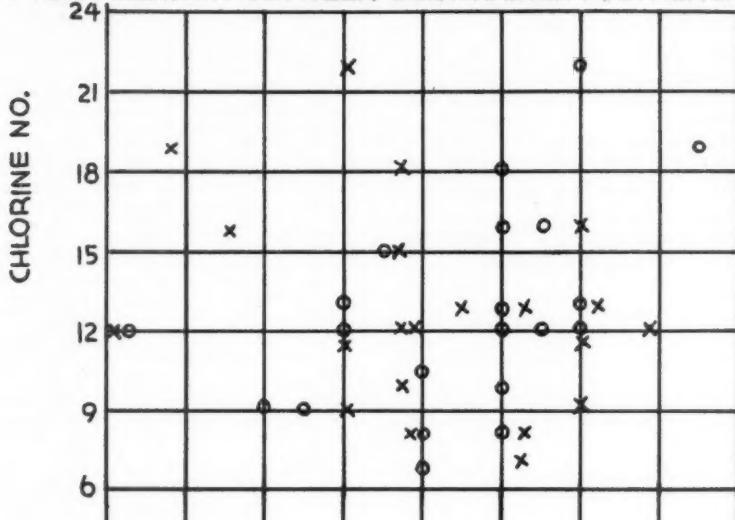
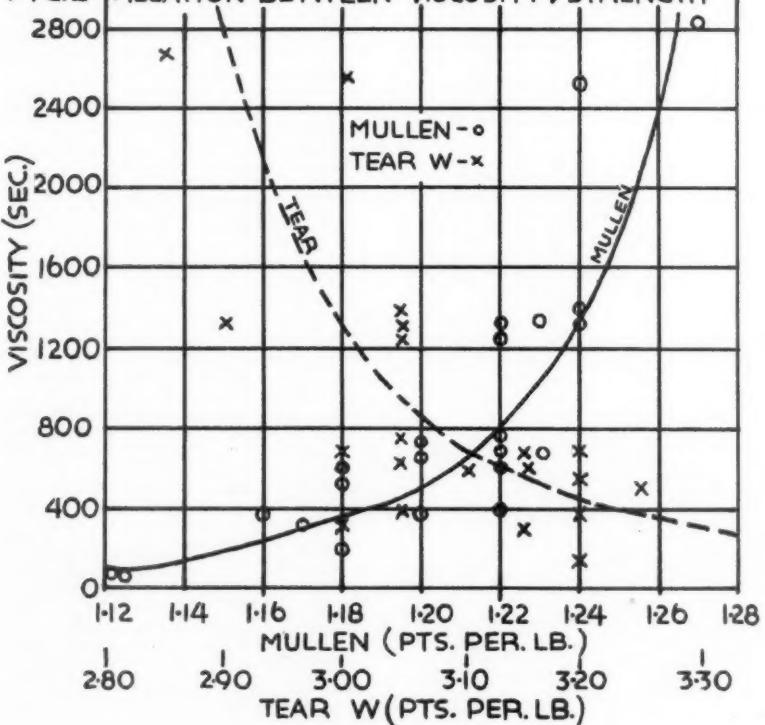


FIG. 2-RELATION BETWEEN VISCOSITY + STRENGTH



The correlation between bleachability and strength characteristics of the finished paper for a two-day period is shown in Figure 1. Figure 2 gives the correlation between unbleached viscosity and strength tests for the same period. It will be noted that the bleachability test gives very little indication of the mullen and tear strength while viscosity tests have a fairly definite correlation. The bleachabilities and viscosities of over 50 cooks are shown graphically in Figure 3. The scattering of the points indicates only a slight relationship between the two tests.

Viscosity control over cooking can be as easily used as bleachability control. Using the procedure given in this report it is possible to run tests on samples from the blow pits as quickly as bleachability tests are now made, giving the cook information on which to blow the next digester. If a more positive control is desired, small sample blow lines can be installed on the digesters from which samples may be drawn and a test made before blowing. By running tests during the latter part of the cooking period the rate of drop in viscosity may be determined for various cooking conditions. A test is then made towards the end of the cook and the blowing time set from this result.

Washing and Blending

- Viscosity tests made on samples taken before and after washing in the blow pits will show the extent to which the fibres were degraded during this prolonged washing period. Samples taken after any washing and allowed to stand for several days before retesting will show whether the washing was complete as far as the removal of degrading chemicals is concerned.

The efficiency of blending tanks can be conveniently checked by running viscosity tests on the stock running in and out at ten to fifteen minute intervals. Since the viscosity of a mixture of two pulps will closely approximate the average of the two pulp viscosities¹ it is possible to predict the outgoing viscosity for a 100 per cent blending efficiency and compare the actual outgoing viscosity with this.

Bleaching

- No other test will indicate the effect of bleaching on pulp fibres as viscosities will. By testing the pulp as it enters the bleach plant and testing again after each stage of bleaching the per cent loss or drop in viscosity can be calculated for each operation. This loss should be held to a minimum as an excessive amount will be reflected in paper having lowered strength. The viscosity drop during bleaching is quite easily controlled by varying the pH, temperature or time of bleaching.

To test the effect of varying amounts of caustic used in the hypochlorite bleaching stage of a sulphite mill the amount was varied at 12 hour intervals to cover the range from zero to 43 pounds per ton. Viscosity tests were made on the pulp before and after bleaching for each cell. Composites for each range were tested in the laboratory beater and the average mullen and tear tests of the paper produced from the pulp was obtained. The results of this test are summarized in tables I and II.

¹ The viscosity of a mixture of two pulps is usually slightly lower than the average viscosities of the pulps. However this variation is not sufficient to affect the efficiency calculations.

This data resulted in the adoption of 12 to 15 pounds of caustic per ton as the standard for bleach plant operation in this mill. The use of 12 pounds of caustic per ton maintained the pH above 7.0 for the duration of the bleach, while 15 pounds maintained a pH above 8.

Continuous testing of the viscosity of the pulp before and after bleaching will provide valuable information on the bleached pulp and on bleach plant operation. An increase in the viscosity loss during bleaching will indicate either a change in bleach plant operation detrimental to the pulp, such as prolonged bleaching time, excessive temperatures or a change from the proper concentrations of bleach liquor and caustic, or a change in the quality of the wood used resulting in cellulose having a poor resistance to chemical action. In either case this change in viscosity relationship is a warning that pulp of poor quality is on the way to the beater room and paper machine, and the knowledge of this fact may allow adjustments and prevent a large amount of off-quality paper. The viscosity test is therefore a sensitive indicator of trouble in the bleach plant providing indispensable information for the operating personnel of a mill after they have become accustomed to it.

As has been mentioned, it is frequently observed that two pulps arriving at the bleach plant with the same viscosity and given identical bleach treatments will have somewhat different viscosities when leaving. A test was developed in 1938 to indicate this degree of resistance as an aid in bleach plant and mill control⁸. In this test a sample of unbleached pulp is obtained and a viscosity test is made on part of it. The balance is quickly bleached under carefully controlled conditions and a second viscosity test made on the bleached pulp. The ratio of these two viscosities, called the "Resistance Ratio," can be correlated to actual bleach plant operation if viscosity control is desired there, or will provide advance information on the characteristics of the pulp. The test requires about an hour. The uses and value of this ratio have not been fully explored as yet but the data obtained indicates a very interesting future for it.

Beating and Jordaning

There is very little change in viscosity during beating and jordaning of a pulp free from beater furnish, indicating that this test does not record physical degradation of the fibre. However, paper stock containing alum, size and other furnish usually has a lower viscosity at the wet end of the machine than when the beater was filled. Table III presents data obtained on pulp beaten in the laboratory beater and pulp beaten and jordaned in mill operation.

In making the viscosity test on paper stock most of the paper furnish is removed by centrifuging and washing. Therefore the higher viscosity loss in stocks containing furnish is undoubtedly due to acidity caused by the alum. Also chemicals are sometimes added in the beater to deliberately soften the pulp. Viscosity tests then are useful in the beater room as an indication of the degradation due to the use of chemicals or low pH, or to control the amount of this degradation if it is desired.

⁸ E. D. Rich, "Bleach Plant Viscosity Control by Means of a Quick Bleach Test," February, 1938 (unpublished report).

Drying

During the past few years many pulp and paper machines have been run at speeds far in excess of that for which they were originally designed. In many cases this has necessitated an increased dryer temperature, resulting in uneven drying and scorching. Oxidation of the pulp or paper sheet, even though not noticeable, will cause a brittleness and lowered strength characteristics. This oxidation is very readily shown by a drop in the viscosity between the stock going to the machines and the finished sheet.

A few viscosity tests made under varying drying conditions illustrates this.

A viscosity test on each reel of paper from the machine will serve as a final check on the entire mill operation. An excessive drop in viscosity between the blow pit and the final pulp or paper sheets indicates that the product is of doubtful quality, provided there has been no major change in operating conditions. Such papers or pulps will age rapidly during storage and may cause complaints when used due to brittleness and lack of strength.

Table II
Effect of Loss in Viscosity on Strength of Pulp

Per Cent Loss in Viscosity	Mullen Per Cent	Tear gms./lb.
40	102	1.7
50	100	1.5
60	93	1.3
70	88	1.2
80	86	1.1
90	85	1.1

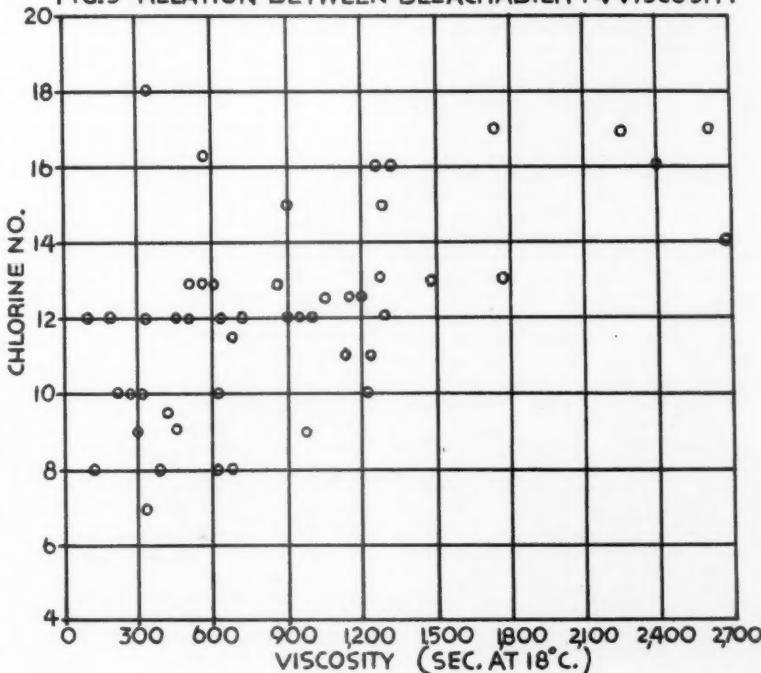
Table III
Effect of Beating, Jordaning and Furnish on Viscosity

Test Number	Beating Time	Jordan Treatment	Furnish	Before	After	Viscosity % Loss
1	70 min.	none	none	255	245	3.9
2	80 min.	none	none	72	70	2.8
3	40 min.	yes	alum, size, filler	179	169	5.6
4	40 min.	yes	& colors	162	142	12.3
5	45 min.	yes	"	162	121	25.3
6	40 min.	yes	"	159	137	13.8
7	60 min.	yes	none	84	80	5.0

Table IV
Effect of Drying on Viscosity

Test No.	Grade	Dryer Temp.	Speed	Before	Viscosity After	% Loss
1	Plain No. 5 Bond	244	605	169	158	6.5
2	Plain No. 5 Bond	243	605	142	135	4.9
3	Tub-Sized Bond	265	515	121	93	23.1
4	Tub-Sized Bond	265	515	137	102	25.5
5	Waterleaf	231	450	58	57	1.7

FIG. 3-RELATION BETWEEN BLEACHABILITY+VISCOSEITY



General Mill Control

• The use of viscosity testing for controlling pulp and paper mill operation will effect savings which, in some mills, will more than offset the cost of the testing and technical supervision. A mill lacking in adequate control must blow "hard" cooks in order that the occasional "mistakes" or "accidents" will not produce off quality paper or pulp. With control it is possible to blow uniform softer cooks and produce a more satisfactory product while obtaining savings in sulphur, chlorine and lime due to acid recovery and the lower bleach requirements of the pulp. Regardless of the savings, however, the main purpose of mill control is to assist the operating department in producing a uniform grade of pulp and paper day after day.

Table V gives the normal operating history of a bond pulp cook from the digester to finished paper as told by viscosity testing.

A paper mill that purchases pulp for its use must usually depend on the statements of the pulp mill as the only guarantee of uniformity and hardness or softness of the pulp. This is especially true when using bleached pulp which cannot be measured for this characteristic by bleachability tests. As a general rule the paper mill operating men assume that each new shipment of pulp is identical to the last or standard shipment until it is in process and the paper tests show that something is different. A beater curve and viscosity test will indicate clearly when the pulp is off-grade and allow adjustments to be made before it is started in the mill, resulting in higher production and less off-quality paper.

Laboratory Testing

• The cuprammonium viscosity is an important evaluating test for the technical man. It is widely used now in research studies and operating experiments. However, one of the most valuable uses of the test is in the study of paper samples returned with complaints or samples to be duplicated.

One frequent cause of complaints is paper which has become brittle and lost its strength during storage. Aging is clearly shown by a drop in viscosity as is shown in Tables VI and VII. Note the extent of the viscosity loss before the physical tests show appreciable deterioration.

It is not uncommon occurrence in a paper mill to receive a sample of paper to be duplicated, or to be analyzed. After a fibre analysis has been made the next most important question is the degree of hardness or softness of the pulp used. In addition to giving a numerical answer to this question the viscosity test will check the results of the fibre analysis as is indicated by the following table of approximate viscosity ranges:

A bond paper showing good strength characteristics but a low viscosity (20 to 40 seconds) is probably made from a mixture of bleached kraft and bleached sulphite. If the paper had fair strength and a very low viscosity (10 to 40 seconds) the pulp used was most likely a mixture of bleached soda and bleached sulphite. Paper having a viscosity of 10 seconds or less is usually 100 per cent soda, while papers testing from 60 to 150 seconds are usually 100 per cent bleached sulphite.

Table V

Test No.	Sample	Viscosity
1	After 8 hours cooking	2,350
2	After 9 hours cooking	520
3	When blown—9½ hours	203
4	Blow pit sample	185
5	Unbleached stock chest	172
6	After chlorinator	168
7	After hypochlorite	93
8	Bleached pulp washer	86
9	Filling beater	86
10	Beater dropped	82
11	Machine headbox	73
12	Paper from reel	67
13	Same paper in finishing room	65
14	In storage one month	51
15	Oven aged for 5 hours at 105° C.	15

Table VI**Natural Aging of Paper (16 lb. No. 5 Sulphite Bond)**

Time (months)	Viscosity (sec.)	Viscosity Loss %	Mullen (pts.)	Tear W	C
0	93	0	17.5	35	40
1	68	27			
3	49	47	16.7	33	40
6	35	62	15.2	30	36
12	24	74	14.5	28	35

Table VII**Artificial Aging of Paper (16 lb. No. 5 Sulphite Bond aged in oven at 105° C.)**

Time (hours)	Viscosity (sec.)	Viscosity Loss %	Mullen (pts.)	Tear W	C
0	93	—	17.5	35	40
1	37	60			
2	29	69	14.9	29	36
3	22	76			
5	18	81			
7	13	86			
10	7	93	12.3	23	26
16	6	94			
24	4	96			
36	3	97	10.1	12	18
48	3	97			
72	1	99	9.3	10	13
92	1	99	7.9	7	11

Table VIII
Viscosity Ranges of Various Pulps

Type	Grade	Unbleached	Bleached
Sulphite	Glassine	3000 to 5000	500 to 1000
	Bond	300 to 1000	45 to 200
	Mimeograph	100 to 500	25 to 125
	Waterleaf	75 to 300	20 to 100
	Rayon	50 to 200	15 to 35
	Cellophane	20 to 50	10 to 15
Kraft	Glassine	500 to 1500	
	Wrapping & Bag	100 to 1000	20 to 100
Soda	Book	5 to 50	1 to 10

Procedure for Viscosity Testing

• All of the viscosity results presented in the various tables were obtained from the following procedure. As was mentioned at the start of this report, the test requires very little special equipment and will not require a special room. The time required for dissolving the pulp has been standardized at one minute. This rapid dispersion is attributed to the use of acetone for washing (which leaves the dried pulp in a fluffy state) and to the saturation and swelling of the fibres with standardized ammonia before the cuprammonium is added.

This test was originally developed as a control test to be used in conjunction with a standard 20-hour tumbler viscosity test used by many rayon mills and pulp mills producing rayon grades. As the empirical term "seconds" for this test has become fairly well known and used,

it was decided to express the results of this control testing procedure in the same terms. Hence the temperature correction factors given with the procedure are also conversion factors to express the viscosity in seconds at the standard temperature of 18 degrees centigrade.

Solvent

• The solution used for cuprammonium viscosities by this rapid procedure is produced from pure copper wire, ammonia and sugar. The apparatus and supplies necessary for the production of the solvent are:

Equipment:

Refrigerator (with motor and compressor in bottom).

Stainless steel cylinder, 3 inches in diameter and 30 inches long, with stainless steel perforated plate

welded 1 1/4 inches in from one end.
No. 14 rubber stopper for cylinder.
2 5-gallon glass bottles for ammonia.
2 2-gallon glass bottles for solvent.
3 1-liter suction flasks.
Rubber and glass tubing.
Supplies and solutions:
Compressed air.
28 or 30 gauge hard drawn copper wire.

Ammonia (about 180 grams per liter, containing 12 grams per liter of cane sugar).

Cadmium Chloride (saturated solution).

Sodium Hydroxide (approx. 10%)

A hole is cut in the top of the refrigerator allowing the stainless steel cylinder to be inserted vertically, the end containing the perforated plate downward, and such that as large an area as possible comes in contact with the cooling unit of the refrigerator. The top end of the cylinder should protrude about one inch above the top of the refrigerator. The large rubber stopper is trimmed on a lathe until it fits snugly in the end of the cylinder, then fitted with a glass "T" tube and inserted in the lower end. A piece of rubber tubing about 2 feet long is attached to one tube of the "T" to drain the cylinder.

The compressed air line should be fitted with a needle valve to regulate the flow. By means of rubber tubing a train of bottles is connected in the air line to wash the air and catch any water or impurities in the air supply. These bottles contain, in order from the needle valve, 1st, empty; 2nd, saturated cadmium chloride; 3rd, 10% NaOH; 4th, empty (or filled with cotton or cheesecloth). After passing through these bottles the air is led into the refrigerator and through tubing making several turns around the cooling unit before entering the cylinder through the remaining arm of the "T." It is sometimes necessary to place a Bunsen valve in the line just before the air enters the cylinder to prevent the solution from backing up into the tubing. Also it is well to place a number of small bottles under each turn of the tubing around the cooling unit, and in the air line, to catch the condensate from the air.

The cylinder is filled with the clean copper wire, which has been cut in 2-inch lengths, a copper rod being used to tamp it down. The ammonia-sugar solution is then poured in to within 3 inches of the top and (when cool) a gentle stream of air is turned on. By means of a second rubber stopper and tubing the ammonia fumes from the top of the cylinder may be removed outside the laboratory.

After the air has been bubbling through the solution for about 3 hours a sample should be obtained and tested for copper. When the copper strength is about 45 grams per liter the air is shut off and the cylinder drained into a 2-gallon bottle. The cylinder should be immediately refilled with ammonia-sugar solution. After several batches have been made more copper wire will have to be added.

Three batches of solution will nearly fill the 2-gallon bottle, and it is now ready for standardizing. Both before and after standardizing the solution must be stored in the refrigerator.

Standardizing the Solution

Reagents:

Sulfuric Acid, approx. 2 N.
Potassium Iodide, saturated solution.
Sodium Thiosulfate, 0.050 N.

Hydrochloric Acid, 1.000 N.

Ammonia, 167 grams per liter, containing 12 grams per liter of sugar.

Shake the bottle of solution thoroughly and test for copper and ammonia as follows:

A 1 ml. sample is pipetted into a small beaker containing about 10 ml. of 2 N. sulfuric acid. Saturated KI is added until the solution clears (cuprous iodide held in solution) and then the iodine is titrated with 0.050 N. sodium thiosulfate to a colorless end point.

$$\text{ml. Na}_2\text{S}_2\text{O}_3 \times 3.175 = \text{grams / liter copper.}$$

The final copper concentration should be 40.0 ± 0.5 grams per liter.

A 2 ml. sample is pipetted into about 18 ml. of normal hydrochloric acid and the titration completed (with the 1.000 N HCl), using methyl orange indicator.

$$\text{ml. HCl} \times 8.5 = \text{grams per liter of ammonia.}$$

The total alkalinity, expressed as ammonia, must be adjusted to 167.0 ± 0.5 grams per liter.

Standardized ammonia and distilled water should be used in diluting to standard concentrations. At all times the solvent should be stored in a cold dark place and any bottle showing evidence of cuprous oxide precipitation should be discarded.

Viscosity Testing

Apparatus and supplies:

Large Buchner filter funnel.

2 liter suction flask.

Vacuum service.

Acetone (commercial).

Model 270 Moisture Teller (Harry W. Dietert Co., 9330 Roselawn Avenue, Detroit, Michigan).

Balance (sensitivity, 10 milligrams).

250 ml. erlenmeyer flasks.

75 ml. measuring pipette with 3-way stopcock.

100 ml. measuring pipette with 3-way stopcock.

Ammonia (standardized to 167.0 ± 0.5 grams/liter plus 12 grams per liter of sugar).

Cuprammonium solvent.

Glass tubes (1 foot long and 1 inch diameter, having stopper in one end).

Reading cabinet (Box containing bank of lights backed by a reflector, the lamps having a total wattage of about 300. The light is shielded except for a slit $\frac{1}{2}$ inch wide and 11 inches high. The tubes are set on a pedestal in front of this slit and held in place by a gate which has parallel sets of wires across it horizontally at 0, 5, 10 and 20 centimeters).

Standardized Aluminum Balls (0.125 ± 0.001 inch in diameter and 0.0474 ± 0.005 grams in weight; obtained from Hoover Ball & Bearing Co., Ann Arbor, Michigan).

Stopwatch.

Thermometer (Range 0 to 100°C). The procedure, assuming the pulp is in the slush state, is as follows:

- If necessary wash the pulp in a tray and, if unscreened, pick out the larger knots and shives.
- Press out most of the water, then slush in acetone-water filtrate from previous tests.

3. Pour into a Buchner filter, suck dry and wash twice with acetone.

4. Peel the pulp gently into thin pieces and place in a drying pan.

5. Dry from 3 to 4 minutes in the Moisture Teller (96% bone dry).

6. Weigh out 3.50 ± 0.01 grams of bone dry pulp and place in a 250 ml. flask (3.65 gms. at 96%).

7. Measure out 75 ml. of standardized ammonia in the pipette and drain into the flask.

8. Stopper and shake vigorously for about a minute.

9. Measure out 100 ml. of cuprammonium solvent in the second pipette and drain into the flask.

10. Stopper and shake vigorously for exactly 60 seconds.

11. Fill a reading tube to within $\frac{1}{4}$ inch of the top with this solution and place in the reading cabinet.

12. Place a thermometer accurate to 0.1 degree centigrade in the solution remaining in the flask.

13. Drop an aluminum ball in the top of the reading tube and take the time in seconds for the ball to pass through 20 cms. of solution (from top to bottom set of wires).

14. Read the temperature of the solution and correct the stop-watch reading to viscosity.

The temperature correction and conversion factors to record the viscosity in terms of the tumbler test at 18°C . are:

Temperature	Factor
°C.	
12	1.40
14	1.63
15	1.73
16	1.82
17	1.91
18	2.00
19	2.09
20	2.18
21	2.28
22	2.38

Discussion

A skilled operator can run duplicate tests checking within 1.5 per cent by this test. There are a large number of factors which can enter into and alter viscosity testing and it would be well for any person who intends to use the test to familiarize himself with these*. The best safeguard to prevent variations due to personal error and changes in solvent strength, room temperature, etc., is to have on hand a standard viscosity pulp sample prepared according to the directions given later on and run two or three tests on this sample with each set of viscosity tests; or at each testing change, such as change of testers or solvent, if tests are being made continuously. The viscosity tests are then corrected proportionally for the amount the viscosity of this standard varies from normal.

Conversion of Viscosity Into Centipoises

The standard viscosity as given by this procedure (after correction by the temperature factors) is an empirical number representing the number of seconds for a standard aluminum ball to pass through 20 centimeters of a 2.5 per cent solution at 18°C . To compare these results with those given by the TAPPI procedure it is necessary to convert them into centipoises. A study is now being organized to prepare an accu-

* E. D. Rich, "Some Factors Influencing Accuracy in the Determination of Cuprammonium Viscosity of Cellulose," Sept., 1937 (unpublished report).

¹⁰ Standard solvent: 30.5 grams per liter of copper and 163 grams per liter of ammonia.

rate conversion chart. However, Table IX gives the results of tests made by both methods on 12 pulp samples.

Standard Viscosity Sample

• In spite of all the care and precautions that are taken in preparing the cuprammonium solvent and in testing, variations will occur in the results from day to day that may cause errors up to 10 per cent.

It is therefore advisable to have a "standard" pulp sample and run check viscosity tests on it each day that tests are made or when starting a new bottle of solvent. If this viscosity varies from normal a proportional correction is applied to all tests made at the same time. In practice, it has been found that the use of such a standard viscosity sample will reduce error in testing from day to day and in testing between testers and between laboratories to less than 1 per cent.

The standard sample should be a large thoroughly washed and bleached pulp sample, having a viscosity near the middle of the usual viscosity testing range. The sample is washed with acetone, dried and stored in large glass bottles. Frequent moisture tests are made and the samples weighed for testing are computed to have 3.50 grams of bone dry pulp.

It should be remembered that even a carefully prepared sample will gradually deteriorate (drop in viscosity) and a new sample should be prepared at least 3 times a year. In standardizing the new sample against the old one the corrections which were applied during the past month should be averaged and if found to be consistently high or low the old sample viscosity should be considered to have changed to this extent. The new sample is then standardized to this new viscosity for the old sample.

Concentration of Pulp to Solvent

• Mills producing hard sulphite, kraft or soda pulps will find this test unsatisfactory unless the concentration is changed to provide readings taking from 25 to 200 seconds. Several samples of bleached soda pulp were recently received for testing. The method of bleaching had been varied for each and it was desired to find out which bleaching method was preferable. Tested by the standard procedure the viscosity of all the samples came out 3 seconds. However, by increasing the consistency to 4.57 per cent the viscosities were raised to a point where they could be easily read and the results indicated the better method of bleaching as shown by Table X.

This is equally true of high viscosities. When the readings take more than 200 seconds, error is introduced due to the heating up of the solution in the reading tube and due to oxidation of the cellulose. Hence if the majority of the readings are in this high range it is suggested that the tests be made at a lower consistency (1.0 to 1.5 per cent) and the results converted to standard.

Dore¹¹ gives an equation for converting viscosities obtained at one concentration into those for another. This formula has been used in making up conversion charts and these charts have compared very favorably with actual tests made on the same pulp sample at the different concentrations:

"As it is not always possible to use a solution containing the standard amount of cotton, some means of calculating the

Table IX
Viscosity in seconds at 18° C. Viscosity in Centipoises at 20° C.

0	0
10	4.5
30	13.5
80	36.0
150	67.5

Bleaching Time	Table X 2.5%	Viscosity 4.57%
30'	3	62
75'	3	51
135'	3	42

Table XI
Conversion Table for Cook Viscosities

Converting readings at concentration of 1.37% (or weighing out 2.40 grams bone dry pulp) to 2.00% (or weighing out 3.50 grams bone dry). In using this table the reading using the 2.40 gram weight is converted to the corresponding reading at 3.50 grams, which is then corrected for temperature as given in the standard procedure.

Reading 2.4 gm.	Reading 3.50 gm.	Reading 2.4 gm.	Reading 3.50 gm.	Reading 2.4 gm.	Reading 3.50 gm.
2	9	26	218	50	610
3	15	27	230	51	633
4	21	28	243	52	656
5	27	29	255	53	682
6	33	30	268	54	708
7	39	31	281	55	738
8	45	32	295	56	768
9	53	33	310	57	803
10	62	34	326	58	838
11	70	35	342	59	876
12	79	36	359	60	915
13	88	37	374	61	957
14	95	38	390	62	1000
15	103	39	406	63	1046
16	112	40	423	64	1093
17	125	41	439	65	1144
18	133	42	456	66	1196
19	144	43	474	67	1256
20	153	44	492	68	1316
21	163	45	510	69	1385
22	173	46	529	70	1455
23	185	47	548	71	1525
24	196	48	568	72	1595
25	207	49	589	73	1670

viscosity of a standard solution from data given by a, more or less, concentrated solution is required. Joyner¹² has given a formula which is a simplification of that of Kendall¹³. Kendall's equation, however, may be written so as to be applicable directly to solutions made by adding a varying weight of cotton to a constant volume of solvent. It then becomes

$$1+C/m=B/\log(V/V_b)$$

Where m is the weight of dry cotton dissolved in 100 cc of solvent, V the observed viscosity and V_b the viscosity of the cuprammonium solvent . . . and B and C are empirical constants. If $1/m$ is plotted against $1/\log(V/V_b)$, the graph should be a straight line. The measurements of Farrow and Neale show this to be so between the ranges of concentration of 1.5 and 3 per cent. By using the value of B and C read off from the graph, $\log V$ may be calculated for any value of m . The formula is certainly valid over a wide range of concentrations.

To use this relation for evaluating the viscosity at a standard concentration, the value of B may be taken as 11 without serious error. Two equations are then obtained:

$$1+C/m=11\log(V_m/V_b)$$

and

$$1+C/n=11\log(V_n/V_b)$$

where m is the weight of the cotton in

the solution used whose viscosity is V_m , V_b is the viscosity of the solvent used, and n is the weight of cotton in a solution of standard concentration whose viscosity, V_n , it is desired to calculate. These may be solved graphically or algebraically."

For the value of V_b in these equations Dore gives 0.0152 C.G.S. units, which is undoubtedly based on solvents having a low copper concentration. The value for the solvent used in this test was found experimentally to be 0.0554. The equations then become

$$m[\log(V_m/0.0554)]+C[\log(V_n/0.0554)]=11m$$

and

$$n[\log(V_n/0.0554)]+C[\log(V_n/0.0554)]=11n$$

where the value for C for any one viscosity range may be calculated from

$$C=[11m-m\log(V/0.0554)]+\log(V/0.0554)$$

The value of V in this last equation is arbitrarily varied over the range desired

and various values for C obtained. These values are then used in the equations, being changed as V_m changes.

Another quite satisfactory method of establishing conversion ratios for different concentrations is given by Franklin Barber and Jessie E. Minor in an article appearing in Paper Industry for April, 1937, entitled "Viscosity of Cuprammonium Solutions." This method was

¹¹ Chem. Soc. Trans., 1922, 121, 1511.

¹² Ann. Physik, 1907, (IV), 23, 9, 447.

used to prepare the conversion table for high viscosity unbleached pulp given in Table XI.

Other Testing Conditions

- The testing procedure assumes that the pulp samples to be tested are in slush form and free of chemicals and beater furnish. Pulp in sheet form, paper and heavily loaded stock need special preparation before the test can be made.

Pulp in Sheets: Cut about 10 grams of the pulp into $\frac{1}{2}$ inch squares and thoroughly slush in water, using a vigorous electric mixer.

Paper: Cut or tear about 15 grams of the paper into small pieces and slush in the mixer for 5 minutes. Centrifuge and mix again for 2 minutes. Repeat until the discharge from the centrifuge runs clear, then slush the pulp in acetone filtrate from other washings and wash in the Buchner funnel.

Paper Stock: Dilute a cup full of the stock and mix; centrifuge and mix as for paper, the mixing period not being as long.

Conclusion

- This treatise has been only a general discussion of the uses for viscosity tests. There is a need for a large amount of research in checking the data and experience already obtained and in developing new uses for the test.

Canadian Excess Profits Tax Affects B. C. Companies

- Because British Columbia pulp and paper companies have been enjoying the best earnings of a decade after several years of depression they are vitally affected by the new Canadian excess profits tax whose general effect is to base the levies on increased revenues directly attributable to the war.

It will be necessary for the pulp and paper industry to demonstrate that its recent comparative prosperity has followed a period of exceptional decline, and that only recently has it been enabled to recoup the losses of the pre-war years.

Although officials of the companies declined to speak for publication, it is obvious that British Columbia Pulp & Paper Company which last year reported a profit of \$435,955 before bonded debt and depreciation, etc., and Pacific Mills, Ltd., Crown Zellerbach Corporation subsidiary, which reported a net profit for 1939 of \$1,244,897 compared with only \$497,574 the previous year, will be subject to consideration.

Because it is privately owned Powell River Company's income is not reported in the ordinary way, but it has had a much improved year and the excess profits taxation will probably affect it in a similar degree.

Westminster Paper Company may be in a somewhat different category by reason of the fact that it has maintained a fairly consistent earning record for several years and was not greatly affected by the depression owing to its diversification of output and the constant market for many of the specialty lines which it manufactured.

Several representatives of eastern Canadian newsprint companies laid their case before Ottawa this month and were told to make out their taxation reports in the usual way and that, if there were extenuating circumstances, they would be dealt with by a board of referees appointed by the government. The board has

not yet been named, however, and some of the men in the industry have expressed some anxiety at the delay.

Newsprint operators claim that their industry is entitled to be considered in the "depressed" class; that is to say, in a class which for taxation purposes might be regarded as reasonably entitled to a fairly substantial rise in earnings during the past year inasmuch as earnings in previous years were abnormally low.

Although no west coast companies come under that heading, some of the Canadian newsprint operations have made relatively no return on capital for the past ten years. Earning power has been so restricted that many of the companies have had to defer necessary work on renovations, repairs, machinery improvements, and so on.

With the exception of 1937, the newsprint industry as a whole has not been able to show satisfactory earnings since around 1930, and in the ten year period several companies have been forced into bankruptcy.

This year, however, the newsprint industry will report large earnings which will be very substantially in excess of the average of the past four years. The improvement has been due to a better demand and more stabilized market rather than to increased prices and "wartime profiteering." The earnings may show a sharp advance over those of the past few years, but in most cases they will represent little more than a normal return on capital investment.

If the industry is unable to receive special consideration, many of the mills will be unable to carry out plant improvements and expansion that would ordinarily have been a part of their 1940-41 program.

As the Canadian excess profits tax now stands little or no benefit will accrue to the newsprint companies from the increased earnings. Only the government will benefit. This is held to be contrary to the spirit of the legislation. When the bill was first introduced in the House of Commons at Ottawa it was quickly drawn to the attention of the then minister of finance, Hon. James L. Ralston, that its provisions would work particular hardship on certain companies, notably the newsprint producers.

In his budget of last June Mr. Ralston made certain changes in the act providing for the appointment of a board to consider the case of "depressed industries."

The excess profits tax was designed primarily to bring back to the government any excess of profits over and above normal income by those companies which would be fully engaged in war work. It was never designed to strangle ordinary industry.

Several companies are holding back development plans until they find out how they stand.

Urfer Named Hawley Purchasing Agent

Kenneth G. Urfer was promoted to the position of purchasing agent of the Hawley Pulp & Paper Company at Oregon City the first of September. He has been with the company for 11 years; since 1930 in the capacity of personnel and safety director. In this capacity he established a good safety record for the pulp and paper mill.

Prior to coming with the company Urfer was a mining engineer in Arizona.

Rayonier Supplies Raylig For Army Camp

- Several railroad tank cars filled with Raylig from the Pacific Northwest enlisted for service in the United States army at Camp McQuaid, California, in mid-October when a gift of Raylig from Rayonier Incorporated at Shelton, Washington, traveled 1000 miles to lay the dust on the many military avenues of this 250th coast artillery camp.

Not only did the pulp company ship the soil stabilizing material to the camp, but employed tractors, road equipment and men to apply it without cost to Uncle Sam, according to Colonel David P. Hardy, commanding the regiment. Camp McQuaid is located 100 miles south of San Francisco and five miles west of Watsonville.

The Raylig, by-product of the Shelton pulp mill, was applied to battery assembly areas, walkways between tents, interiors of the big infirmary tents, streets alongside the bathhouse and also the interior of a mammoth circus tent now used for motion pictures, boxing and other regiment assemblies.

Part of the material has been reserved for application to areas around the big coast artillery guns to lay the dust caused by firing. From a military standpoint a dustless terrain is said to permit more rapid firing due to better vision around the gun areas.

Raylig is a soil-stabilizing by-product of the Shelton pulp mill, and contains lignin, the part of Western hemlock which has not yet found commercial use in great quantities, but on which the best research chemists in the industry are spending great effort and large sums to find a solution.

Kelly Visiting Mills in the States

- Claude Kelly, paper mill superintendent at Pacific Mills Limited, Ocean Falls, B. C., is visiting various pulp and paper mills in Oregon and Washington. He will return to Ocean Falls shortly after the first of the year.



KENNETH G. URFER,
Purchasing Agent,
Hawley Pulp & Paper Co.

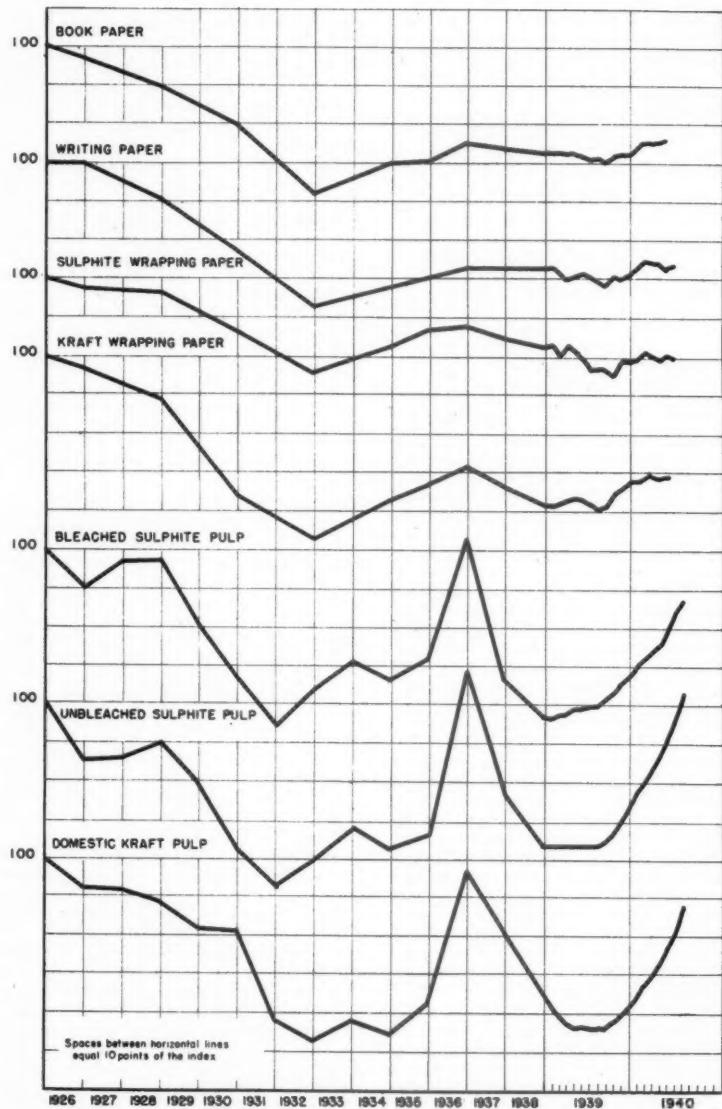
Price Trends on Non-fibrous Raw Materials, Pulp and Paper

• "In response to current demand from the industry," stated E. W. Tinker, executive secretary of the American Paper & Pulp Association on October 4th, "we are issuing a series of charts showing the trend of prices of nonfibrous raw materials and paper and pulp. We feel that these charts are particularly pertinent at the present time.

"A major war, no matter where fought, has economic repercussions on the economic systems of all countries. This has always been true and has become increasingly so through the passage of years as transportation and communications have improved and methods of mass production progressed more rapidly in some countries than in others. The earliest changes during any period of emergency usually occur in the prices of raw materials and the costs of labor. Although the prices of many raw materials have not yet moved substantially, upward movements seem inevitable. Such increases would be particularly important to the paper and pulp industry where slight increases in cost schedules cut drastically into already narrow profit margins. The attached series of charts are, therefore, presented to aid management in evaluating changes which are likely to take place in the raw material price structure.

"In general, the price trends shown on these charts are based on spot prices because these data are most readily available. To indicate the long-run movements, spot prices have been placed on a five month moving average base. Since most materials are, however, purchased by the paper and pulp industry largely on contract, annual net Bureau of Census values are compared with the spot prices. The trend of Census values is almost identical with the contract price trend because the former represents the bulk of the transactions which took place. Although there is a considerable differential between the absolute monetary values of spot and census bases, the index trend of these series coincide closely."

PRICE TRENDS
MAJOR GRADES OF PAPER AND PULP
1926-1940



Source: Paper Values, Bureau of the Census
Pulp Values, Daily Mill Stock Reporter

Russian Pulp Producing Capacity

• Capacity of Soviet Russian wood pulp mills now reaches 1,370,000 metric tons, according to recent trade estimates, the Forest Products Division of the Commerce Department reports.

The peace treaty with Finland added

370,000 tons of chemical and 14,000 tons of mechanical pulp to the Russian output, and annexation of the Baltic States brought in an additional 161,000 tons of chemical and 25,000 tons of mechanical pulp. Before these additions, Russian wood pulp capacity was estimated at 375,000 tons for chemical and 425,000 tons for mechanical pulp.

Development of Leadership In Supervisory People

by L. A. WILLIAMS*

MY assignment tonight, as indicated by the chairman, is: "Development of Leadership in Supervisory People."

There is a great challenge to us in this field, because we are at a turning point in our national life. The path which we follow will in a large measure be determined by the leadership exerted by those in position to impress men's minds and dictate their actions. We have new interpretations of the Constitution, we find the national debt so large as to stagger the imagination, regimentation is practiced, we are facing a problem of national defense and more than a remote possibility of WAR.

The bulk of leadership still rests with the great middle class of our population and it is from this group that we must produce the leadership to save our nation from going down into a morass of pestilence, famine and barbarism unparalleled in its history.

You might wonder just why I refer to a national situation and what importance I place upon it in relation to my subject. My thought is that present national problems and the problems of developing leadership are so inter-related that they must be considered jointly. Then too, these problems did not just happen these last few years, but have been developing over a period of many years.

We find that those whom we detest as "Borers from Within" have been working for years and have some points in their program that we can afford to emulate. They "Get to the Youth of the Nation" and have many years at the impressionable age to get over a philosophy that carries on throughout the balance of life. We in business and industry on the other hand, have, if at all, done our training for leadership after the man had been added to the payroll.

This being a program which occupies years of effort must, therefore, be considered in its entirety. To be all inclusive and to arrive at a successful supervisory leadership group, we will of necessity have to go to the home, the church, and to the school and examine them, and leave there the plans that we have in mind for the development of leadership and the selection of future supervisors, for the leaders of the future can be no better than the potential strength inherent in our youth.

We find that the home atmosphere, the moral and social fiber have taken on such a hue as to indicate that "Character," that all-basic element of leadership, is not being produced in large enough volume. We have a job to perform in this respect and that is to have meetings with parent groups and church groups to outline what is expected of the boys and girls who will soon be taking their places in business and industry if they are to become leaders.

*Manager, Everett District, Puget Sound Power & Light Company. Presented at the Dinner Meeting sponsored by the Pacific Section of TAPPI, held in Everett, Washington, on the evening of November 12th, 1940.

Today our schools are honey-combed with text books that indicate that "George Washington might have been a land-grabber, James Madison a shady-trader, the Constitution a protector of the economic royalist, and modern business an oppressor of the poor." One of the most prolific writers of these text books has as the underlying thesis of his works that, "Our American way of life is a failure and must be replaced by a new order based upon some type of state socialism." This same writer declares candidly in his writings that the public schools must be utilized to "Change the climate of opinion" so that traditional American ideals and motivations will be abandoned.

In this connection it is suggested that we take a look into the school systems of our communities to see just what is going on—find out just what kind of material is being produced for leadership of the future. Are they producing individuals who have acquired attitudes and habits which reflect stability, courage, honesty, respect, industry, tolerance, initiative and discipline? That the world owes them a living—if they work for it?

I have touched but lightly upon these phases because I am aware that you expect me to dwell more upon the practices deemed to be essential after the person is employed and has become a supervisor. I charge you, however, not to overlook what I have mentioned in this respect or we will in the long run fail to develop "Leadership in Supervisory People" because basically, it will not be present.

Technical and Supervisory Ability Differ

- There is a difference between accomplishment or technical ability in a particular field and the ability to supervise followers in that same field. Too often it is assumed that because a man is an outstanding engineer, accountant or salesman and has risen to the top of the ranks that he is obviously qualified to direct the work of others. This is by no means necessarily true. In fact, it is only proper to note that while men are concentrating on production and accomplishment that they are thereby distinctly diverted from gaining experience with men, organizations and situations in the field of leadership. The problem arises therefore as, how best to give training for future leadership while men are making good in their routine non-supervisory tasks. There is often a misconceived idea that the supervisor must out-rank those under him in technical ability. The obvious fact, however, is that men who have concentrated on technical advancement have, as stated, been forced to neglect the development of

supervisory ability. When a choice must be made to fill a supervisory position, it is quite likely that the man not excelling in technical ability but showing other qualities of leadership should be selected to lead the group.

Now that we have the man on the payroll and by his efforts he has reached a supervisory position, what are we going to do to develop leadership in order that he will accomplish his task with a satisfaction to himself and to the management, and yet retain the respect and devotion of the men he supervises.

Outstanding writers are now advising us that "We are woefully ignorant about this problem of leadership simply because we have not as yet made a scientific study of the traits of leadership in the larger fields." They say we don't even know which traits are used in each kind of leadership.

No scientific study is needed, however, to make clear one vital fact. Look at the men who have commanded devotion and sacrifice regardless of what their cause may be, and you will discover one thing they have in common—they give people something to live for—that is the great secret of leadership in any group.

This, in business and industry, however, is not enough. The supervisory group in business and industry must be keenly alive to note the current pattern of the field in which they are interested, be able to evaluate the trends and take a definite position toward them, drawing up a program of action, persuading other people to accept this program and organize them to put it over and be able to administer the program after it has been adopted.

Other things being anywhere near equal, the executive who can most successfully keep the cause of his business in the minds and hearts of those under him will show the best record of accomplishment.

Qualities of a Leader

- The first and most obvious function of a leader is to know what to do and what to say and what not to do and what not to say in order to achieve the purpose or objective of the undertaking or business in which he is engaged. This perhaps is a trite statement but it is not as simple as it sounds. It sometimes disconcerts observers to note that many things a leader tells his followers to do were suggested to him by the very people he supervises. In a way this has to be true. He has to be patient enough to listen a great deal and he has to be at times the center of communication. If he used only his own ideas he would resemble a one-man orchestra rather than

"...The executive who can most successfully keep the cause of his business in the minds and hearts of those under him will show the best record of accomplishment."

"The supervisor's job is not to generate all the ideas and answers but to develop better ones from those associated with him."

a good conductor who is a very high type of leader. However, it is necessary for us to be cautious in this connection. Experience demonstrates how difficult it is to secure leaders who are able to be properly attentive to subordinates, to be channel of communication, to copy the right ideas in such a way that they will still remain supervisors and leaders and retain the respect of their followers. It involves knowing whom to believe, accepting the right suggestions and using appropriate occasions to act.

He must be above board in his discussions and insist that his associates "Give him the works" when he invites their opinion instead of their saying what he might like to have them say. He must not take time out to "brow beat" them after they have expressed their opinions or it will not be long until the "Yes Sir" class is developed and the fellow running the class will soon be "On his own." The supervisor's job is not to generate all the ideas and answers but to develop better ones from those associated with him.

Another outstanding qualification for leadership is decisiveness. Ability to make decisions is the outstanding characteristic of real executives, supervisors or leaders. It requires a willingness to decide as well as a capacity to do so. The outward appearance only of being decisive is often harmful and certainly misleading, undermining confidence and implying a misunderstanding and use of authority. Executive ability requires making actual decisions and only such as are warranted. Negatively, the failure to decide is one of the most destructive conditions in any organization. It applies to every executive or supervisor in the organization. Delay either to direct or to approve or disapprove, creates suspense, checks the decisiveness of others, introduces lethargy and inactivity throughout the whole organization.

Some of the other characteristics associated with successful leaders are:

1. A good sense of humor, or not taking ones self too seriously. The correlation between a good sense of humor and high executive rank is more than a coincidence.
2. Fairness, the man who has this quality does not seek to take full credit to himself for achievements in which others played an important part. He is willing to admit his own mistakes and never expects others to help save his face. This soon gives him a reputation as being a "Big" person.
3. Avoidance of injurious gossiping. The man who indulges in malicious talk about his associates is marking down his own value. The man who commands the highest prices for his services recognizes that if discussions of personalities are to be indulged in at all they should be constructive.
4. Cooperation with everybody. The man who will go places as a supervisor is the one who gives constant attention to increasing his knowledge and understanding of human nature so as to enlarge his personal acceptability. He knows that if he does not have the support of his associates in selling his ideas as well as

himself his advancement will be definitely retarded. Developing personal acceptability should be carefully distinguished, however, from playing company politics. The former is a sound commendable method of getting ahead based on genuine interest in people; the latter is usually employed as a substitute for sound progress and in the long run actually results disastrously.

5. The man will get ahead who constantly tries to imagine the problems of his superior, his department and his company and then undertakes to make the job of his superior easier or the operations of his department and company more effective through helping to meet the envisioned problems.

These things can only be accomplished by the development of the greatest team work. Many of our leaders are able, intelligent, hard-working supervisors, but they fail to click entirely because they cannot develop the faculty of giving those with whom they are surrounded "That something to live for," and at the same time giving them the "Ball to pack" a portion of the time. In this connection, excerpts from an editorial from the September, 1939, issue of the magazine "Power" appealed to me . . .

"Dizzy Dean is a great ball player. Lou Gehrig is a great ball player. But they play different brands of ball. Dizzy is an individualist; Lou plays for and with the team. Baseball history sparkles with the names of home-run Caseys who were great individual players. But managers keep their fingers crossed—they never know when the player will try for a home-run and risk a fly-out—When he's been signalled to bunt. Consistent, winning ball takes a team.

"Why? Because the catcher backs up the first basemen on a throw from infield. The shortstop-first base combination sticks together tighter than Damon and Pythias. It is as if that fabled Cub threesome—Tinker to Evers to Chance—were multiplied by three.

"That's how to play pennant-winning ball, and how to keep steam in a boiler-teamwork. America's greatest living power engineer can't keep steam up alone. He must be backed by a balanced and integrated staff from fireman to shift engineer. That staff, further, must possess the ability to get along with other plant departments, just as surely as a ball team must get along with its fans. Any other course leads to the pop bottles of trouble.

"To develop this team work, the 'Players' must be let in on the 'know' by their leaders. Supervisors must be willing to talk over 'plays' with those whom they expect to carry them out.

"Cooperation, mutual trust, and un-

derstanding—a readiness to fight for the team instead of for individual glory or pay—that's the key. The team play exemplified by the byword 'Tinker to Evers to Chance'."

Must Understand Human Reactions

• A necessary adjunct to successful leadership is a good understanding of human habits and reactions—thus psychology plays a great part in the abilities of those who supervise. It not only yields immediate tangible results but it also creates greater happiness for the persons supervised and brings them to a more complete realization of their ambitions.

The knowledge upon the part of the supervisor of the psychological reaction in human relations will take him a long way toward achievement of his responsibility. Men are not simply machines—they are machines plus aspirations, prejudices, weaknesses, troubles of their own, peculiar abilities and temperament.

Coupled as part of a team with psychology is imagination which if properly directed can mean much to a business in profits and also toward creating new inspiration in man power. I've seen too often, and you have too, the imagination of supervisors stretched in the wrong direction. I mean by this, that too often those in authority imagine or assume that new personnel and even old know all about the business or the job at hand and can read the mind of the supervisor. Nothing can wreck manpower faster or get a poorer job out of personnel.

It is my conception that every employee is entitled to know:

1. The Complete background of his company.
2. Its aims, objectives and policies.
3. The rules and regulations of employment.
4. Company benefits — such as insurance, medical contracts, etc.
5. The nature and extent of the job to be performed and if possible, the reasons for performing it if these are not obvious.
6. That he is part of an organization that depends upon his performance to make the perfect accomplishment.
7. That he will be brought into meetings to discuss the problems of his company and given inspiration to assist him in better meeting his share of the burdens of the business.
8. That he will have job security consistent with his ability to perform and the economic status of the business.
9. That he is expected to cooperate with others in the organization and seek the help which they can give him.
10. That he is expected to make self analysis frequently and that occasionally the "boss" will sit down with him and in a constructive manner go over "His short comings," if any, and make helpful suggestions for overcoming them.

"The knowledge upon the part of the supervisor of the psychological reaction in human relations will take him a long way toward achievement of his responsibility. Men are not simply machines—they are machines plus aspirations, prejudices, weaknesses, troubles of their own, peculiar abilities and temperament."

11. That homage is paid to ability and that success and more pay will not come to him in later years just because he is getting older—unless ability and performance are in evidence.

12. That salaries are paid, not for a man's time, but for the product of his time.

If this formula is followed you will find manpower blossoming out—not just working hard or intensively, but applying the things which his leader imparts to him and making a real accomplishment for the day's effort.

Above all, don't try to develop men in "Your own image" because such procedure is a sure road to failure. No two men were born alike, so let's not try to recreate them by trying to fit them into a mold not made for them. To the contrary, analyze them and develop their existing talents to the fullest and in so doing provide a well-rounded personnel of many diverse qualifications capable of performing any task assigned. Some goal should be stimulated in the mind of each man so that the job horizon is widened into a scene of something more than bread and butter.

Bossing should be like the invisible power behind the throne. The supervisor must look after his personnel as well as to be dominate over them. He must get suggestions from them as well as give them orders. He must delegate responsibility to develop others to take his place, if he ever hopes to further himself and if he wants to raise his head above a mass of detail for, as the late Samuel M. Vauclain of the Baldwin Locomotive Works so truly said: "The secret of managing men is to teach them to manage themselves."

"To have people do," someone has said, "is first to have them feel." The "feel" was left out of training. Men know how to do by reason of training, but they reach total effectiveness by reason of some deeper emotion—call it inspiration. Try to touch that deeper emotion that causes men to do because they want to do. But remember—to be effective and enduring, inspiration must be supported by adequate instruction.

Camas Paper School Registration Sets Record

A new record for enrollment in the Camas Paper School was set in October when 345 men and women registered for the eighth annual term. The school, conducted by the Crown Willamette Paper Company Division of Crown Zellerbach Corporation, has attracted international attention in industry because of its success in providing employees with an opportunity to become familiar with all phases of pulp and paper manufacturing and to increase their usefulness to themselves and to the company.

During the first week 6 women and 33 men from the West Linn, Oregon, mill registered for the term.

A public address system has been installed to aid the instructors and students of the larger classes.

Hanny on Eastern Business Trip

J. E. Hanny, manager of the Crown Willamette Paper Company Division of Crown Zellerbach Corporation at Camas, Washington, left by airplane for New York on October 21st. He went directly to San Francisco before traveling eastward.

Crown Willamette Inn To Improve Service

A change in management of the Crown Willamette Inn at Camas, Washington, was announced in late October by the Crown Willamette Paper Company Division of Crown Zellerbach Corporation.

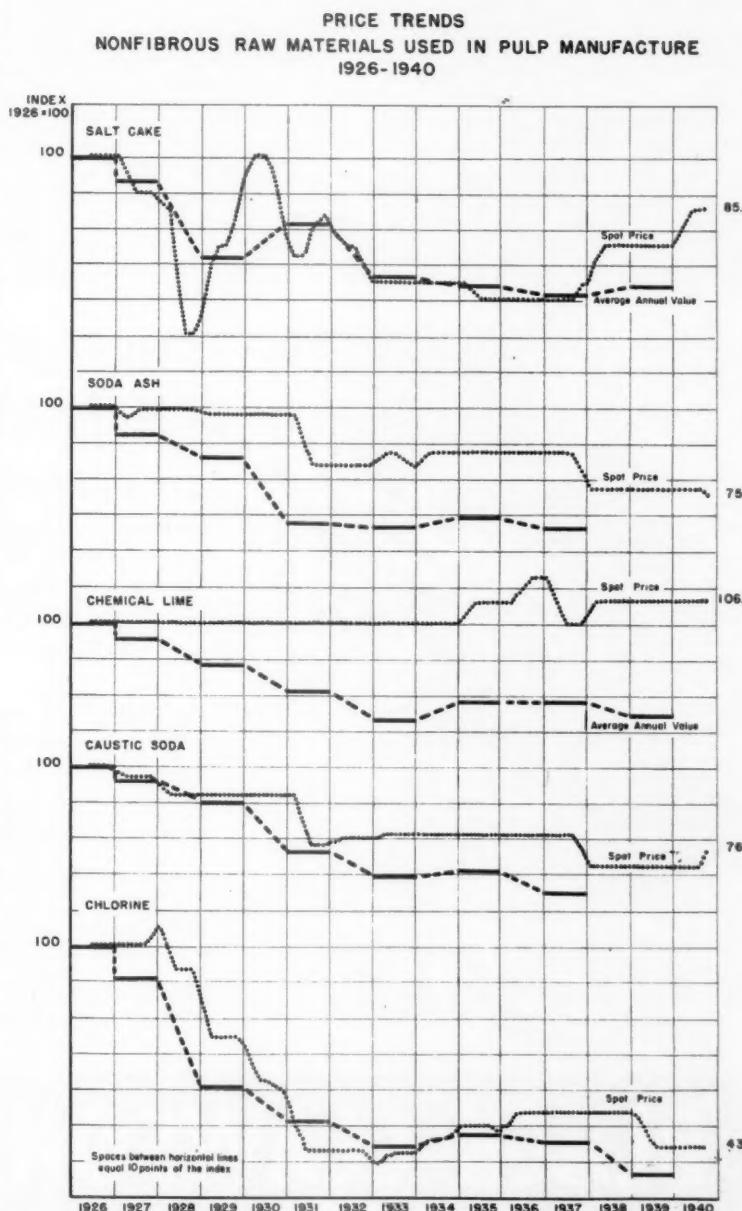
Walter Cathcart, recently of California, took over as manager November 1.

Plans are being worked out for renovating the inn dining room and kitchen to provide dining room service to the clientele. Adequate facilities are to be provided for banquets and special dinners.

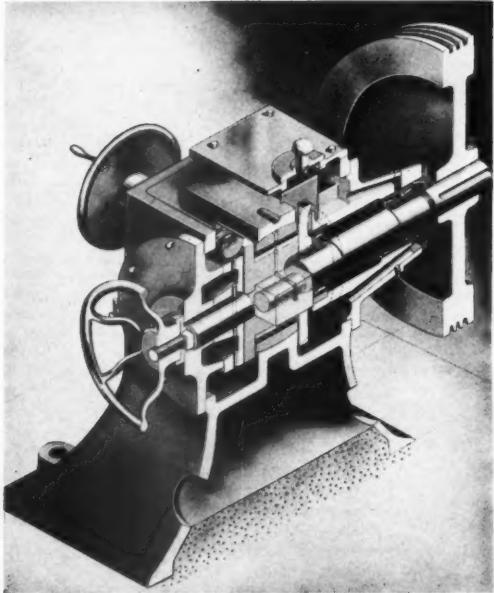
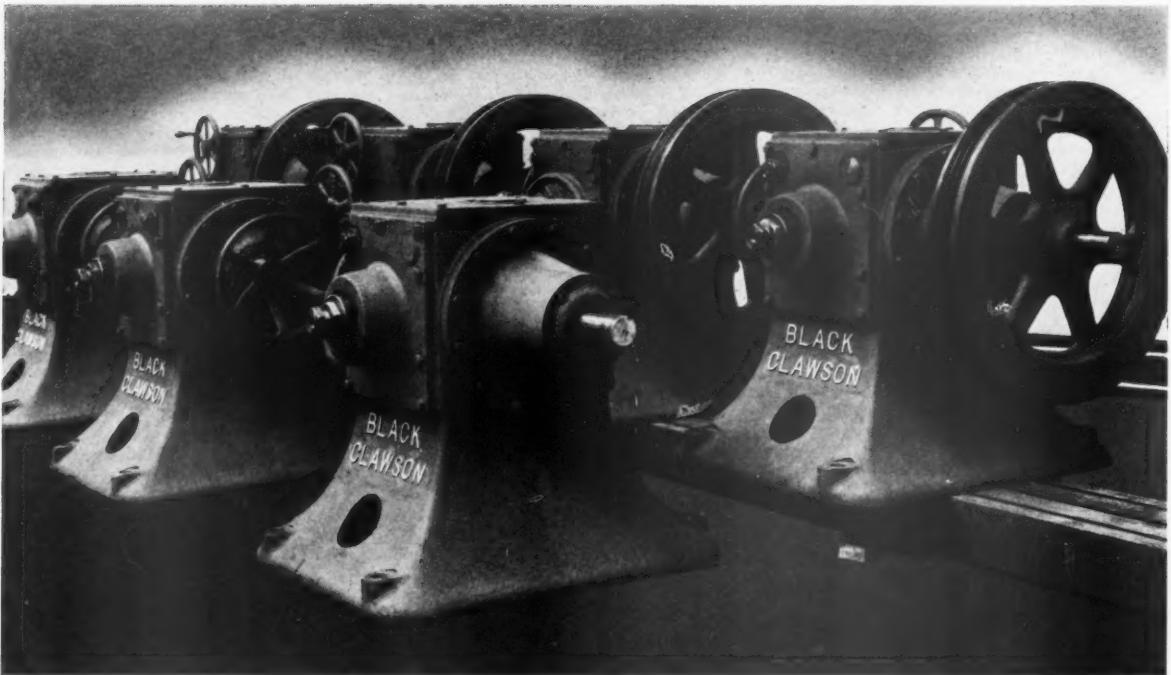
Deer Waits for Macy To Get License

Bob Macy, screen tender, has had better luck than most of the deer hunters at the Bellingham mill of the Puget Sound Pulp & Timber Company. During the season, while looking over his stump ranch just outside the city limits of Bellingham he saw a four-point buck wandering in the brush.

Macy rushed back into town, bought a license, got his gun and hurried back to the ranch. The deer had disappeared but early the next morning he showed up and Macy bagged the buck, a 200-pounder.



Source: Spot Prices, Oil, Paint and Drug Reporter.
Average Annual Values, Bureau of the Census and Bureau of Mines.



• Anti-friction bearings to assure perfect alignment and full control of stroke • Crosshead guide and base cast integral . . . impossible to shake loose • Stroke adjustable while running . . . 0" to $\frac{7}{8}$ " • Equipped with circulating oil System.

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All the important features . . . and we mean *all* . . . are yours in the superbly designed and engineered Black-Clawson Fourdrinier Shake.

It's solid, rugged, and grout anchored . . . simply can't pull loose from its foundation.

It's designed for easiest possible access to interior mechanism . . . just remove eight cap screws, lift out the sub-assembly and there are the exposed working parts.

It's built with dynamic balance and a precision stroke of amazing smoothness and steadiness.

Before you invest in new shake equipment, get all the facts and figures about the Black-Clawson design. Ask Mr. Robert Petrie, our Pacific Coast representative, for full details.

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Portland, Oregon

Weyerhaeuser Complete New Store Building at Longview

• The new storehouse of the Pulp Division Weyerhaeuser Timber Co., at Longview, is completed and stocks were moved in by October 29th. The structure is a two-story building 120 feet long by 40 feet wide and houses all of the spare parts for the pulp mill.

Fluorescent lighting is used on the main floor and the building is equipped throughout with automatic sprinklers for fire protection. There are two travelling, electric cranes of one-ton capacity in the new storehouse; one on each floor. The crane on the second floor travels the full length of the building enabling the heavy equipment to be taken directly from the landing outside into the room for heavy storage.

Three unit heaters of the steam-hot water type are installed on the first floor for heating the building. Bob Calligan is the store keeper.

J. H. McCarthy

Joins TAPPI

• Justin H. McCarthy, plant engineer, Soundview Pulp Company, Everett, Washington, recently became a member of National TAPPI.

Other new members from the Pacific Coast are: John G. Morrison, chemist, British Columbia Pulp & Paper Company, Port Alice, B. C., and Theodore J. Nelson, package technician, California and Hawaiian Sugar Refining Corporation, San Francisco, California.

Mr. McCarthy is a graduate civil engineer from Dartmouth College, and for a number of years was associated with Hardy S. Ferguson, consulting engineer of New York City. Mr. Morrison graduated in 1939 from the University of British Columbia, and Mr. Nelson attended Stanford University.

Grant Fowler Dies in Vancouver

• Grant M. Fowler, plant superintendent of the Powell River Company, died in a Vancouver, B. C., hospital on October 11th, after a short illness. He had been ill with influenza for several weeks and entered the hospital for examination following a partial recovery.

Mr. Fowler was one of Canada's youngest and best known pulp and paper mill executives. Funeral services were held in Vancouver October 15th and burial was in Montreal.

He was born in Sherbrook, Nova Scotia, July 23, 1897, where he attended elementary and high schools. Upon graduating from McGill University with the degree of master of science he entered the paper industry in eastern Canada.

At Grandmère, Quebec, he was named general superintendent of the Laurentide division of the Consolidated Paper Company, after serving with the Dryden Paper Company and the Canadian Forest Products Laboratory.

On April 14, 1939, Mr. Fowler was appointed general superintendent of the Powell River Company's mill at Powell River, B. C. In the last war he served with the 7th Canadian Siege Battery from McGill University. He married Miss Margaret Sargent of Ogdensburg, N. Y., in April, 1938. He is survived by his widow; his mother, Mrs. W. J. Fowler, Montreal; and three sisters.

Another California Dairy Installs Pure-Pak

• The Fuller Rancho, one of Southern California's noted dairies, at Corona, has been equipped with a Pure-Pak Junior paper milk container machine.

Varney Joins Superintendents Association

• Preston Varney, shift superintendent, Longview mill, Pulp Division Weyerhaeuser Timber Company, Longview, Washington, recently became a member of the American Pulp & Paper Mill Superintendents Association.

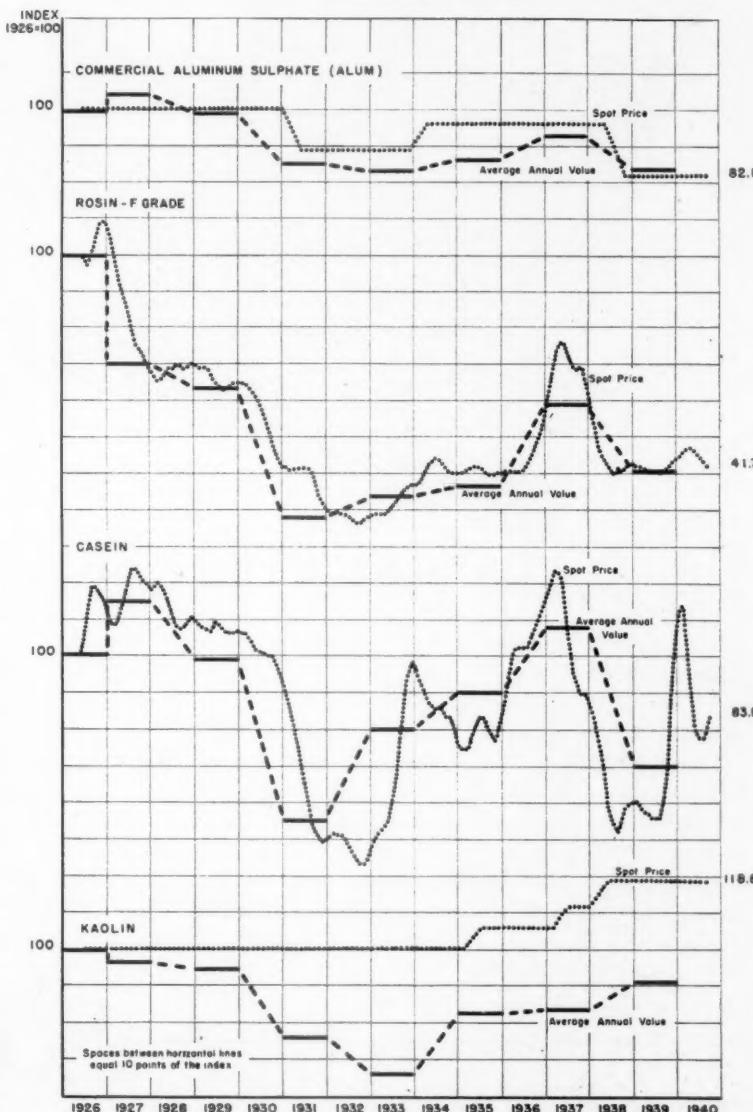
Puget Sound Bowling League Under Way

• Eight teams have been entered in the Fall Tournament of the Puget Sound Pulp & Timber Company's bowling league at Bellingham. A team is entered from each of the four shifts, one from the maintenance department, two from the wood room, and one from the office. The office team, which held the cellar position last year has been strengthened by the addition of Russell Scott, who led the league for average high score.

So far "B" shift has shown its heels to the rest of the teams as it did for the entire 1939 season.

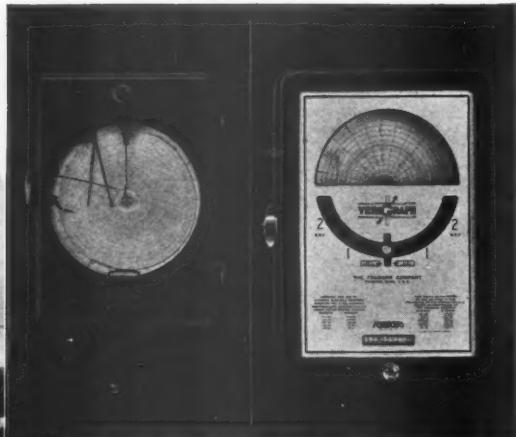
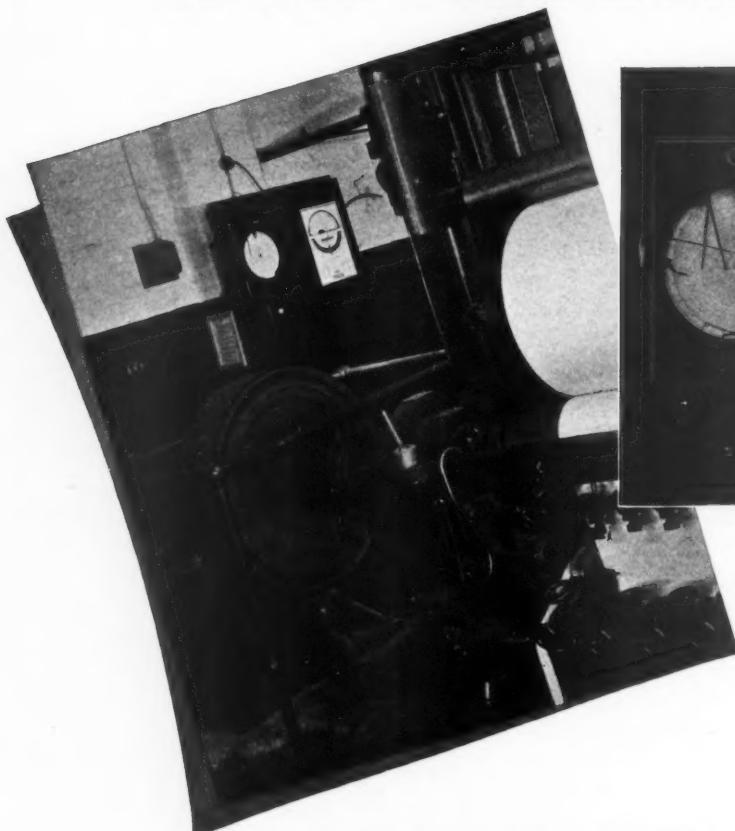
PRICE TRENDS

NONFIBROUS RAW MATERIALS USED IN PAPER MANUFACTURE 1926-1940



Source: Spot Prices, Oil, Paint and Drug Reporter
Average Annual Values, Bureau of the Census, Bureau of Mines, and Gomble's Review.

"Pin Down" Moisture Content to New Close Limits.....



(above) Verigraph Moisture Control instruments.

(left) Typical installation in New England fine-grade mill.

... with VERIGRAPH MOISTURE CONTROL

Now you can hold the moisture content of paper closer to the ideal Equilibrium Point than you would have believed possible with your present drying equipment . . . by installing Verigraph Moisture Control.

These precision Foxboro Systems measure the moisture content of the moving sheet with a degree of accuracy previously unknown. Variations as small as 1/10 of 1% bring instant control action . . . readjust temperatures with exactness subject only to the efficiency of the dryer itself. Any moisture-deviation from the control point is also accurately recorded.

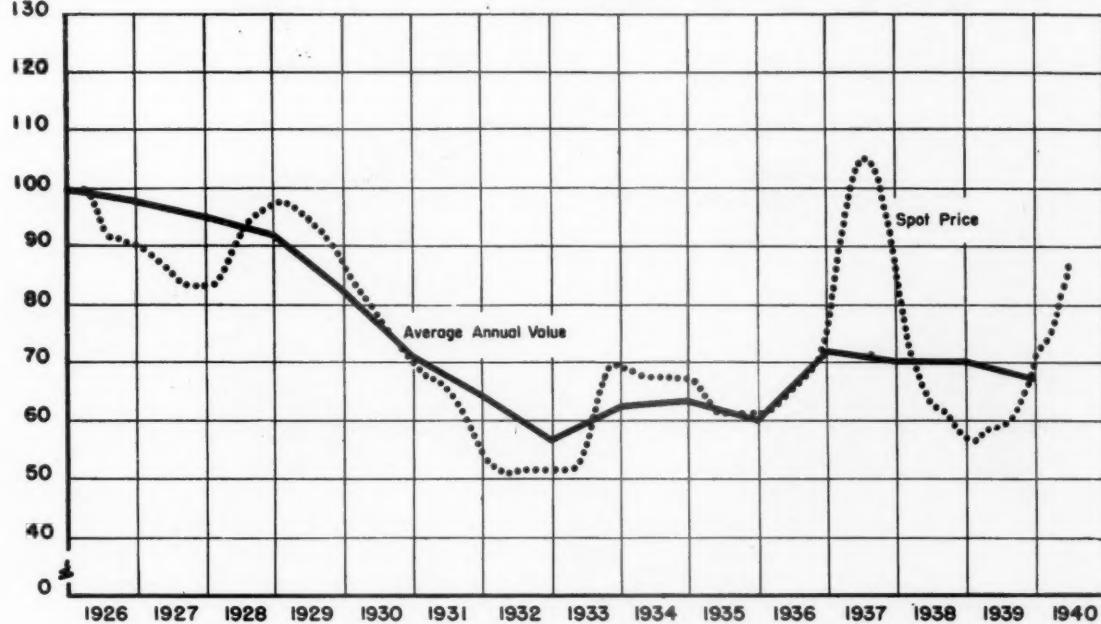
Benefits that never could be consistently attained before, are now available to paper manufacturers. Full fiber strength is always maintained because over-drying is eliminated. Finish, caliper and weight are vastly improved by the greater moisture-uniformity. Sheet dimensional changes are practically ended.

Get the full story of this original Foxboro development that is producing remarkable results in more than 200 installations. Write for Bulletin 212-1. The Foxboro Company, 110 Neponset Ave., Foxboro, Mass., U. S. A. Branches in 25 principal cities.

FOXBORO
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Instrumentation

**SPOT PRICE AND AVERAGE ANNUAL PRICE
BLEACHED SULPHITE PULP**

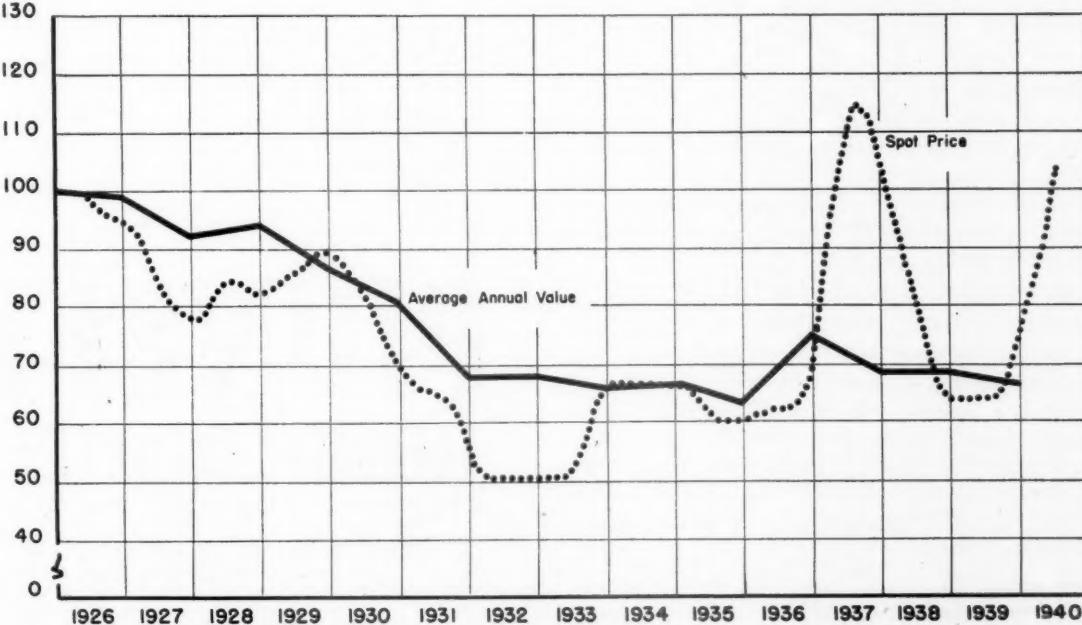
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1926=100



Source: Spot Prices, Daily Mill Stock Reporter
Average Annual Values, Bureau of the Census

**SPOT PRICE AND AVERAGE ANNUAL PRICE
UNBLEACHED SULPHITE PULP**

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1926=100



Source: Spot Prices, Daily Mill Stock Reporter
Average Annual Values, Bureau of the Census

THIS IS ONE DATE THAT WON'T BE KEPT FOR MONTHS



How do you know you have the best conveyor belt for your needs? You say it has given long service. Compared to what? Have you ever tried any other? Have you tried Pioneer Conveyor Belts?

Breakdown alibis don't go any more in our plant ...too costly in time and lost labor. So, you can imagine the shock we got this year when the inspection sheet came back ... "NO SIGN OF WEAR," after we'd been replacing them regularly. But, then, the last one was ordered under far different conditions.

That Pioneer representative just couldn't be satisfied to leave with the usual set of specifications ...he dug thoroughly into our plant conditions and operating requirements. That's the way Pioneer's skilled belting craftsmen can build "balanced" belting ...balanced to wear evenly ...balanced to get a full dollar's worth of good out of the fabric, instead of throwing fifty cents worth of it away because of premature surface covering failure.

Temperatures, oils or chemicals, weight of material, weather, pulley sizes, all dictate the specifications. On such knowledge, PIONEER

WILL POSITIVELY BE ABLE TO RECOMMEND THE BELT THAT WILL GIVE YOU THE LOWEST OPERATING COST. On such knowledge, you will get a belt that never *gives out*, but wears out...long after it has done the job of cost-cutting you are after.

A first step toward saving from 10% to 50% of your belting service cost is to consult your nearest Pioneer belting specialist. Meantime, ask for the folder, "How Pioneer Rubber Mills Can Help You Get More Value For Your Belting Dollars."



PIONEER RUBBER MILLS

BELTING • HOSE • PACKING

353 Sacramento Street • San Francisco • California

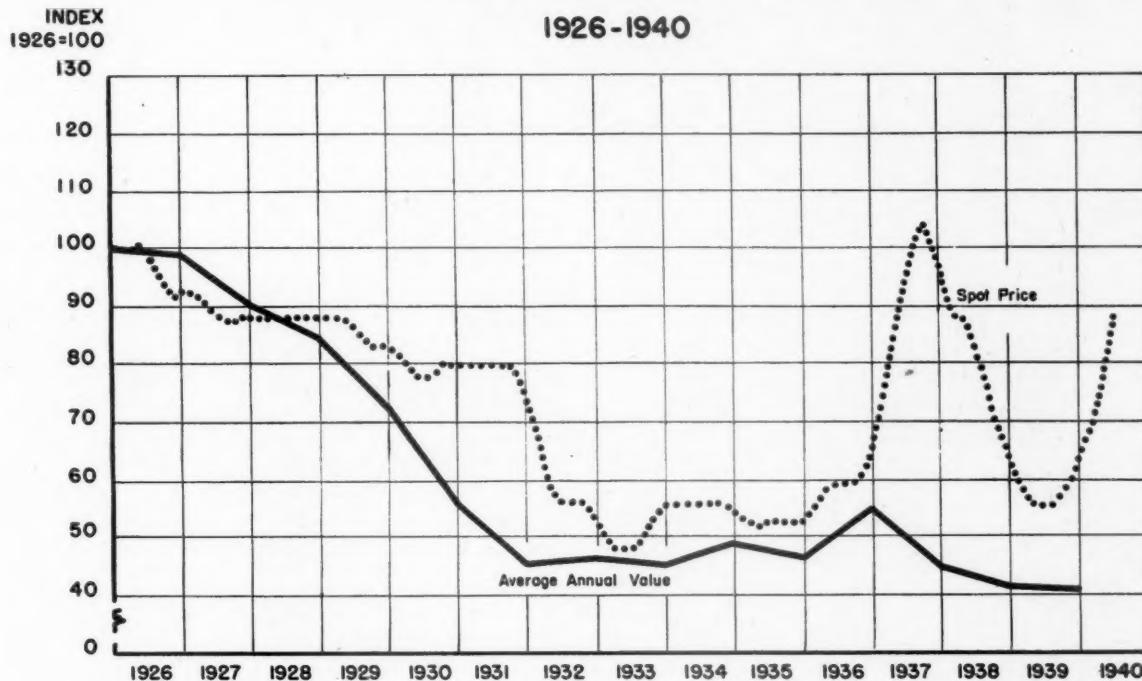
PLANT AT PITTSBURG, CALIF.

SALES OFFICES: Los Angeles • Portland

Tacoma • Seattle • Salt Lake City • Denver

Chicago • St. Louis

**SPOT PRICE AND AVERAGE ANNUAL PRICE
DOMESTIC KRAFT PULP**



Source: Spot Prices, Daily Mill Stock Reporter
Average Annual Values, Bureau of the Census

Japanese Paper Production Curtailed

● Paper production has been drastically curtailed in the last half of this year in Japan according to reports from the U. S. Department of Commerce. The largest paper producer, the Oji Paper Company announced that it had been forced to reduce operations due to shortage of caustic soda and bleaching powder.

The paper shortage is said to be acute and some representatives of the printing trades blame faulty distribution methods. Sole distribution rights rest with the paper dealers and quotas are determined on the basis of past orders. A movement to organize a unified national distribution organ has been instituted among the paper and printing trades. Printers also ask for participation in the distribution control.

Japanese Rayon Situation Reported Unfavorable

● The Bureau of Foreign & Domestic Commerce, U. S. Department of Commerce, reports that Japanese rayon textile exports totaled 5,754,000 yen in September, a decline of 1,224,000 yen below the August exports. Exports of staple fiber textiles rose, however, 164,000 yen over August to 412,000 yen, but rayon yarn exports dropped slightly by 26,000 yen to 3,340,000 yen.

Other reports, says the Department of

Commerce, predict a depression for the manufacturers of rayon and staple fiber goods during the remainder of this year and possible reduced dividend rates for this class of business as a result of higher manufacturing costs, declining demand from abroad, and shortage of essential chemical supplies, especially of caustic soda.

Tom Moffitt Called to Service

● Thomas E. Moffitt, chemical engineer with the Hooker Electrochemical Company, Tacoma, was called to active service as a captain with the Quartermaster Corp., U. S. Army.

He reported at Fort Lewis, Washington, on November 14th and will, as a member of the Reserve Corp, serve a full year on active duty.

Longview Fibre Has a New Tug

● A new river tug, "Longfibre II," was commissioned in November by the Longview Fibre Company. Thirty-two feet in length and nine feet three inches of beam, the new tug is powered with an 87-H. P. Gray gas engine fitted with a 2-to-1 reduction gear.

It will be employed chiefly to retrieve "sinkers" and in other work around the company's log booms.

Larrabees Visit Friends on Coast

● Mr. and Mrs. Benjamin T. Larrabee of Berlin, N. H., were visitors to the Pacific Northwest in November. Mr. Larrabee, sulphite superintendent for the Brown Company at Berlin, was the first superintendent of the Olympic Forest Products Company bleached sulphite pulp mill at Port Angeles (now Rayonier Incorporated) and later became superintendent of the Longview bleached sulphite pulp mill, Pulp Division Weyerhaeuser Timber Company at Longview when it began operations late in 1931.

Mr. Larrabee has been associated with the Brown Company for the past five years. As a past president of the American Pulp & Paper Mill Superintendents Association, he was active in the formation of the Pacific Coast Division.

Art Zimmerman Visits East By Air

● Arthur Zimmerman, general manager of the Pacific Straw Paper & Board Co. mill at Longview, left by airplane October 12th on a business trip through the Eastern states. He returned October 23.

During the trip he visited several of the larger industrial sections including Chicago, Buffalo, Rochester, Dayton, New York City, and Cincinnati. The Ohio Miami valley was found quite active in the board industry while this business in New York state was rather slow.

For a Continuous Domestic Source of Supply



American industry is faced today with the greatest challenge it has ever known. It is asked—almost overnight—to speed up production—to produce phenomenal quantities of essential materials to meet a national emergency.

In line with Rayonier's established policy of—

a Continuous Domestic Source of Supply
it will lend its fullest support to the program of an adequate domestic supply of dissolving and paper pulps on its customary proven quality basis.

Better Pulps for Better Performance

RAYONIER
INCORPORATED

For a continuous domestic source of supply

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San Francisco

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FERNANDINA, FLORIDA
HOQUAM, WASHINGTON
PORT ANGELES, WASHINGTON
SHELTON, WASHINGTON
TACOMA, WASHINGTON

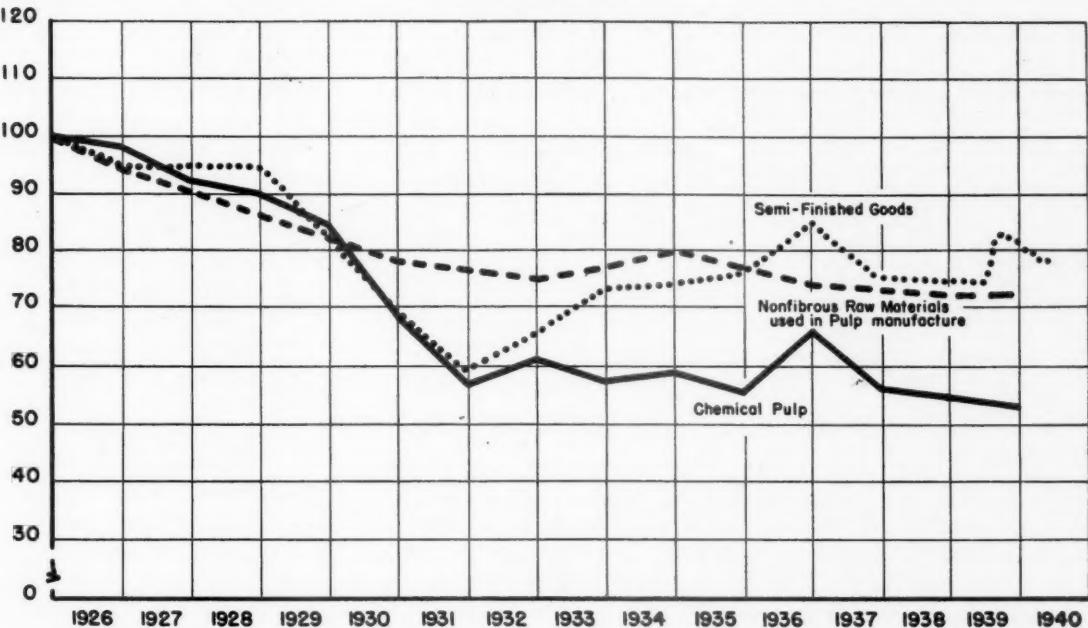
SALES
OFFICES:

122 East 42nd St.
New York City

**PRICE TRENDS OF PULP, NONFIBROUS RAW MATERIALS
USED IN PULP MANUFACTURE, AND OF SEMI-FINISHED GOODS**

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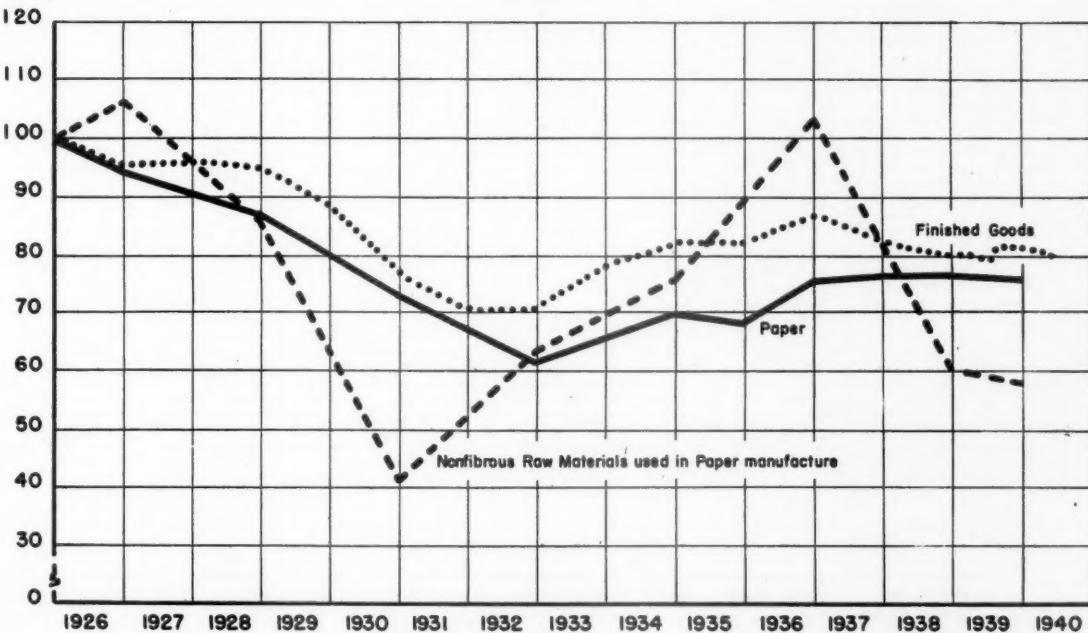


Pulp, all chemical pulp, Bureau of the Census
Nonfibrous Raw Materials, Oil, Paint and Drug Reporter
Semi-Finished Goods, Department of Labor

**PRICE TRENDS OF PAPER, NONFIBROUS RAW MATERIALS
USED IN PAPER MANUFACTURE, AND OF ALL FINISHED GOODS**

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Paper, all grades, Bureau of the Census
Nonfibrous Raw Materials, Oil, Paint and Drug Reporter
Finished Goods, Department of Labor

Bulkley, Dunton Form Export Company

• George C. Cobean, formerly vice president of the Butler Paper Company, has joined Bulkley, Dunton & Company as president of the newly formed export company, Bulkley, Dunton Export Company, Inc.

Mr. Cobean's experience in the Latin American field is extensive. He represented the National Paper and Type Company in the Argentine from 1913 to 1926, when he returned to this country and became associated with the Butler Paper Company. From 1926 until now he has maintained his interest in this market through the operation of the Butler American Company, export division of the Butler Paper Company.

Mr. Cobean sailed for the Argentine October 18th, and will return to New York after the first of the year to direct the activities of the Bulkley, Dunton Export Company, Inc., from its offices at 295 Madison Avenue, New York City.

National Aniline Moves Portland Offices

• The National Aniline & Chemical Company has announced the removal of its offices from 646 N. Thompson Street in Portland, Oregon, to 730 West Burnside Street in the same city. The new telephone number is Beacon 1853.

Roy S. Carey is in charge of the company's dyestuffs sales and service in the Pacific Northwest.

Fir-Tex Expands Finishing Room

• A 65-foot by 75-foot addition to the finishing room has recently been built onto the Fir-Tex Insulating Board Co. mill at St. Helens, Oregon. A new tile machine, a band saw and special milling machinery have been installed in the addition, making two tile machines in operation at the Fir-Tex plant.

Methocel Prices Reduced 1/5 to 1/3

• Substantial price reductions on Methocel, a water soluble ether product, are announced by The Dow Chemical Company, Midland, Michigan.

Reductions of 1/5 to 1/3 of the former prices, it is believed, will enlarge the use of this product, already widely accepted in the paper, leather, paint, pencil leads and other industries.

The new schedule of Methocel prices follows:

One to 99 pounds	60c lb.
100 to 1999 lbs.	55c lb.
2000 or more lbs.	50c lb.
Carloads (30,000 lbs.)	47c lb.

New prices for this product are f.o.b. Midland, Michigan. Freight allowed on 100 pounds or more.

On the Pacific Coast Methocel is handled by the Great Western Division, The Dow Chemical Company, with headquarters in San Francisco and offices in Seattle and Los Angeles.

Rayonier Opens Sales Office in Kalamazoo

• At the end of October Rayonier Incorporated announced the opening of sales offices in the American National Bank Building in Kalamazoo, Michigan.

Gerell Lagerloef has been engaged to represent Rayonier Incorporated in the middle western territory and will have his headquarters in the Kalamazoo office.

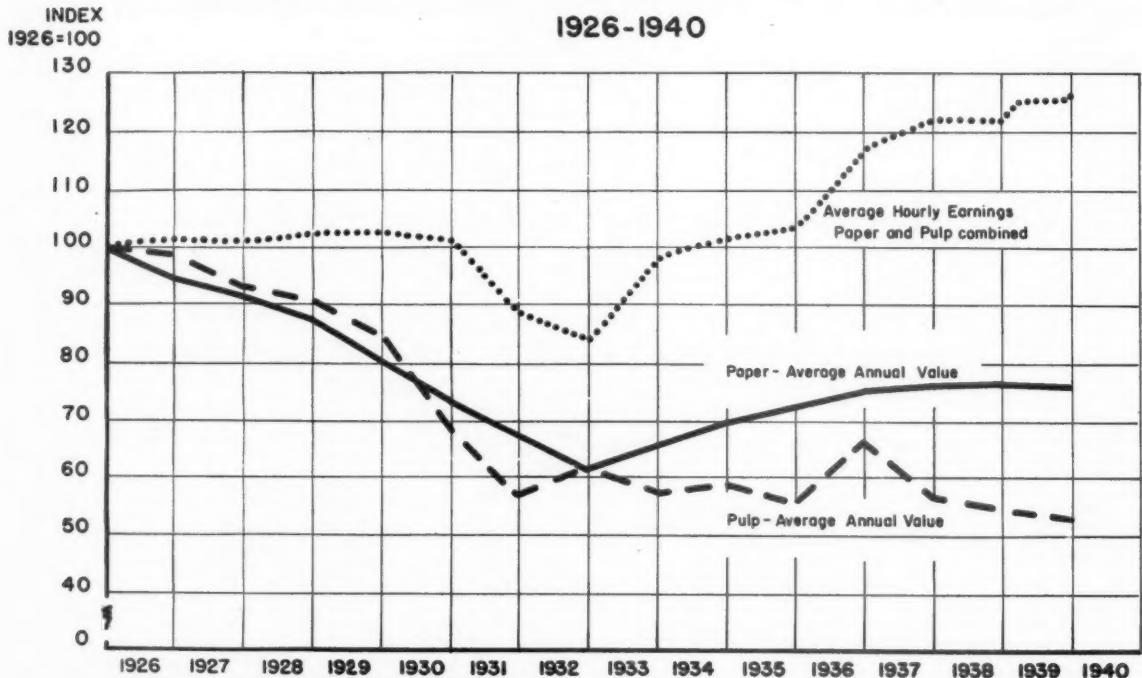
Have You Seen Any Errors In Volume IV?

In anticipation of the need for a new printing of Volume 4 of The Manufacture of Pulp and Paper, the editor wishes to be informed promptly of any errors that may have been noticed in the third edition. Please state section and page number and give correction in full. New material cannot be added at this time. Information should be sent direct to the Editor in Chief, J. N. Stephenson, Gardenvale, Que.

Duvall on Two Months' Sick Leave

• H. W. Duvall, Superintendent of the converting plant of the Crown Willamette Paper Co., Division of Crown Zellerbach Corp., is on a two or three months' sick leave. F. H. Galloway, assistant technical supervisor, is taking Duvall's place during his absence.

AVERAGE ANNUAL PRICE OF PAPER AND PULP COMPARED WITH AVERAGE HOURLY EARNINGS IN THE PAPER AND PULP INDUSTRY



Source: Paper and Pulp Values, Bureau of the Census
Hourly Earnings, National Industrial Conference Board

Powell Pipe Band's Tour A Great Success

Serenades Blake, Moffitt & Towne office and warehouse employees in Seattle.

One day last spring two Dallas, Texas, publishers visited the Powell River Company's mills and watched with interest a parade of the company's Scottish pipe band regaled in bright new uniforms just received from overseas. The original shipment of uniforms, incidentally, was lost when the *Athenia* was sunk the day after war was declared.

"It would be a smart idea to send that pipe band down to the Texas State Fair," suggested one of the publishers. Powell River Company executives were convinced that the idea did have merit and they began to plan accordingly. The result was that Powell River Company has succeeded in putting over one of the most effective goodwill stunts in the paper industry.

Most of the month of October was spent by the Powell River pipe band touring the Pacific and Southwest states, giving concerts, parading through the streets and otherwise drawing attention to the British Columbia paper town.

"We undertook the project not merely as a promotion plan for Powell River Company, but as a contribution to the building of international friendship," remarked President Harold Foley. "The success achieved has exceeded our biggest hopes."

The Powell River band, consisting of fourteen bagpipers and drummers, attired in Highland uniforms with the McGregor tartan, not only played at the Texas State fair; they gave exhibitions at Dallas, Houston, Corpus Cristi, Fort Worth, Amarillo, at Los Angeles and Hollywood, San Francisco and Oakland. They apparently made a big hit everywhere.

The band was founded by Major John McGregor, a Powell River Company employee who won the Victoria Cross in the last war and who is now in command of a Canadian battalion in training for overseas service.

Not only are all the members of the band veteran employees of Powell River Company; they are nearly all ex-service men.

Elmer C. Lee, president of Virginia Dock & Trading Company, Seattle, and for many years with the Powell River Company and other Brooks-Scanlon interests, managed the tour.

On their way home the members of the band arrived in Seattle, October 19th, in time to see the University of Washington football team defeat Oregon State College.

The band serenaded the pressmen of two of Seattle's newspapers, the Seattle Times and the Seattle Star which use Powell River newsprint. The next day, Sunday, the pressmen reciprocated by staging a dinner for the band at the New Washington Hotel under the auspices of the Seattle Printing Pressmen and Assistants Union No. 39. A guest of the pressmen along with the band was Leo P. Chapman, sales manager of Blake, Moffitt & Towne, Seattle.

Monday morning, October 21st, the band moved into the offices of Blake, Moffitt & Towne and entertained the of-

fice and warehouse employees with an impromptu concert before returning to Powell River.

"The Powell River pipe band from British Columbia is continuing, in this Texas city, to draw the same enthusiastic receptions it has received everywhere on its good will tour," said the San Antonio, Texas, papers on October 14th.

"The band arrived here aboard its special plane after a rousing welcome at Corpus Cristi.

"The Caller-Times, newspaper of Corpus Cristi, under whose auspices the band played there, declared editorially that the band is rivalling in audience appeal the Hill-Billy band with which Governor

O'Daniel toured the state in his successful election campaign a few years ago.

"Caught" Sunburns

"While at Corpus Cristi, the bandsmen tried their hands at deepsea fishing, but got only sunburns.

"They played before a capacity audience of the Federation of Women's Clubs at Neuces Hotel, and many of the ladies actually cried with joy.

"At Robstown, 15 miles from Corpus Cristi, 3000 people heard them perform, and in the evening, with the co-operation of the Caller-Times, they entertained new citizens of the city. Only a few hundred were expected at the concert, but 2000 turned up.

Practical Joke

"The bandsmen had quite a scare when, while visiting Neuces County Court House, they were ordered to produce their Canadian registration cards. The cards were mysteriously missing and the Neuces County sheriff and his deputies insisted on 'booking' and fingerprinting the entire band. Later the bandsmen learned they had been victims of a practical joke inspired by manager Lee."



The POWELL RIVER PIPE BAND in front of the Blake, Moffitt & Towne offices in Seattle upon the completion of their successful two weeks' goodwill tour of the Southwestern states.

ELMER C. LEE (left), President of the Virginia Dock & Trading Company, Seattle, who managed the tour and accompanied the band, being congratulated by J. W. THOMPSON, Manager of Blake, Moffitt & Towne, Seattle. Blake, Moffitt & Towne are agents on the Pacific Coast for the Powell River Company's newsprint.

Trade-Talk



of Those Who Sell Paper in the Western States

Sierra Paper to Handle L. L. Brown Papers

• The Sierra Paper Company of Los Angeles has been appointed agent for Escort Ledger and Machine Posting, the 50 per cent new rag ledger recently introduced by the L. L. Brown Paper Company, Adams, Mass. Impressive announcements and other interesting sample pieces relating to the new line are now being mailed to the trade.

What Fruit Has Seeds On the Outside

• Paper people took to the air to feature on a quiz program over NBC last month from San Francisco when representatives from three of the Coast's leading paper wholesale houses competed.

Ben Roth and Betty Crittenden representing Blake, Moffitt & Towne, and Jack Gilbert and Glory Palm, representing the Zellerbach Paper Company were tied in the last round. A. Murphy and Josephine Hinkle of the Pacific Coast Paper Company had been eliminated previously.

Finally the Zellerbach team went down to defeat because neither of the two entrants knew: "What fruit has seeds on the outside?" In case you weren't listening, the answer is: strawberry!

Paper Mill Men Plan Christmas Party

• The November meeting of the Paper Mill Men's Club of southern California was scheduled to be held on the 15th at the California Country Club, Culver City. This is the annual meeting coming on the heels of the Sports Carnival and Hi-Jinks at which the members get a bit of a dividend for the labors in the interests of the Hi-Jinks. The dividend varies from year to year and this year will be in the form of a fine show.

The golfers' section of the club will meet on the greens in the afternoon. Dinner will follow after which will be the show with the evening closing with the usual indoor sports.

Plans are underway for the Christmas party for underprivileged boys but no date nor final details were ready for announcement.

Jaggard and Wuenschel Attend Erie Conference

• B. P. "Doc" Jaggard, San Francisco representative of the Hammermill Paper Co., and J. F. Wuenschel, Pacific Coast sales manager of the company traveled to Erie, Pa., to attend the annual meeting of Hammermill agents.

Los Angeles Paper Men On 5-Day Week

• In complying with the 40-hour work week at regular time, as required by the Federal Wages and Hours Law, the paper merchants of Los Angeles have gone to a five-day week of eight hours each day, closing their establishments Saturdays.

Coarse Paper Market Weak

• Weakening of the market for kraft and coarser grades of paper is noted by John R. Young, vice-president and treasurer of Pacific Mills, Ltd., Vancouver, B. C.

"There is still a strong demand, but it is not as strong as a few weeks ago," reported Mr. Young, who said that competition of southern kraft and other papers might be cutting into sales to some extent.

Palmer Johnson Awarded 40-Year Pin

• Palmer Johnson, a salesman in the Los Angeles Division of the Zellerbach Paper Company, recently was awarded his 40-year pin.



BLAKE, MOFFITT & TOWNE TEAM WINS RADIO PRIZE Professor Puzzlewit, dean of Pacific Coast question askers, tossed his verbal dynamite at representatives of the Pacific Coast paper industry on his Sunday, October 26th, KPO National Broadcasting Company blue network program. First prize of \$25 went to the team representing Blake, Moffitt & Towne.

The paper brains gathered from left to right, are: ALVIN MURPHY and Miss JOSEPHINE HINKLE of the Pacific Coast Paper Company; JACK GILBERT and Mrs. GLORY PALM of the Zellerbach Paper Company; and, BEN ROTH and Miss BETTY KITTRIDGE from Blake, Moffitt & Towne.

Commercial Paper Rearranges Shipping Setup

• The Commercial Paper Company, San Francisco, of which Marcus Alter is president, has had the shipping department rearranged. Formerly on the third floor, the shipping department is now on the ground floor, making it convenient for trucks to come right into the building to load and unload, thus saving much time and giving quicker deliveries.

Lamboy Visits Eastern Principals

• Lee W. Lamboy of the West Coast Coverage Co., Los Angeles, left early in November for a month's trip east expecting to return early in December. His travels will take him north into Maine, into upper New York state, and to the major cities along the line of travel home. He will contact the home offices of his principals which are the Oval Wood Disc Corp. at Tupper Lake, N. Y., Hardwood Products Co., at Guilford, Maine, Food Packaging Co. at Milwaukee, Sanitary Containers Co. Corp. at Mooresville, Ind., and the Herz Cup and Straw Co. He will go by train picking up a new car at Detroit to drive from there home.

Zellerbach Service Pins Awarded

• Claude Zamloch, credit manager of the Oakland Division, Zellerbach Paper Company, received his 35-year service pin last month. Bert Myers, credit department manager, Headquarters Division; George Swarberg, Los Angeles Division, and Joe Orlando, San Francisco Division, received 20-year pins.

Miss Kelly On Vacation

• Miss Polly Kelly, editor of The Flash, and hostess at the Zellerbach Paper Company Headquarters, San Francisco, is seeing the sights in New York. Berta Schapiro, secretary to Victor E. Hecht, vice-president of the company just returned from a Pan-American tour to Mexico City.

Hawley Launches New River Tug

• The Hawley Pulp & Paper Company's new tugboat, Quanita, was christened and launched October 12 at Portland, Oregon. Miss Clarice G. Pershing, cousin of General John Pershing, christened the 32-ft. boat which is to be used for boating and rafting logs.

Miss Pershing is also a niece of Mrs. Carl E. Braun, wife of the vice-president and mill manager of the Hawley Pulp & Paper Company mill at Oregon City. It was in honor of Mrs. Braun that the Quanita was named. Mrs. Braun was given the name "Quanita" at birth by the late Quana Parker, chief of the Comanche Tribe (Indian Territory), Oklahoma, who has for years been one of the foremost figures in Washington, D. C., working for the North American Indians.

The Quanita has an all-steel, 32-foot hull and was built by the Albina Engine & Machine Works, Inc., of Portland. Power is provided by a 6-cylinder, 125-h.p. Cummins diesel engine.

This boat was designed for assembling and towing log rafts in the upper Willamette River and was put into service immediately after the launching.

Bert Neumann a Third Time Grandfather

• Bert Neumann, printing paper sales manager, San Francisco Division, Zellerbach Paper Company, recently became a grandfather for the third time.

Seaboard Paper Company Issues Football Schedule

• A neat little piece of timely advertising is being passed out by Harry Bean, manager of the Seaboard Paper Company, San Francisco. It is a Masterline fotoball schedule for 1940, issued by the Fox River Paper Corporation, Appleton, Wis., manufacturers of the Masterline papers.

The schedule is nation-wide, and also contains other information of interest to football fans.

Penn Salt Officers Elected

• At the annual organization meeting of the board of directors of the Pennsylvania Salt Manufacturing Company held in the company's offices in the Widener Building, Philadelphia, October 23rd, the following officers were reelected: Leonard T. Beale, president; Y. F. Hardcastle, vice president; N. Emory Bartlett, vice president.

L. A. Smith, well known in the chemi-

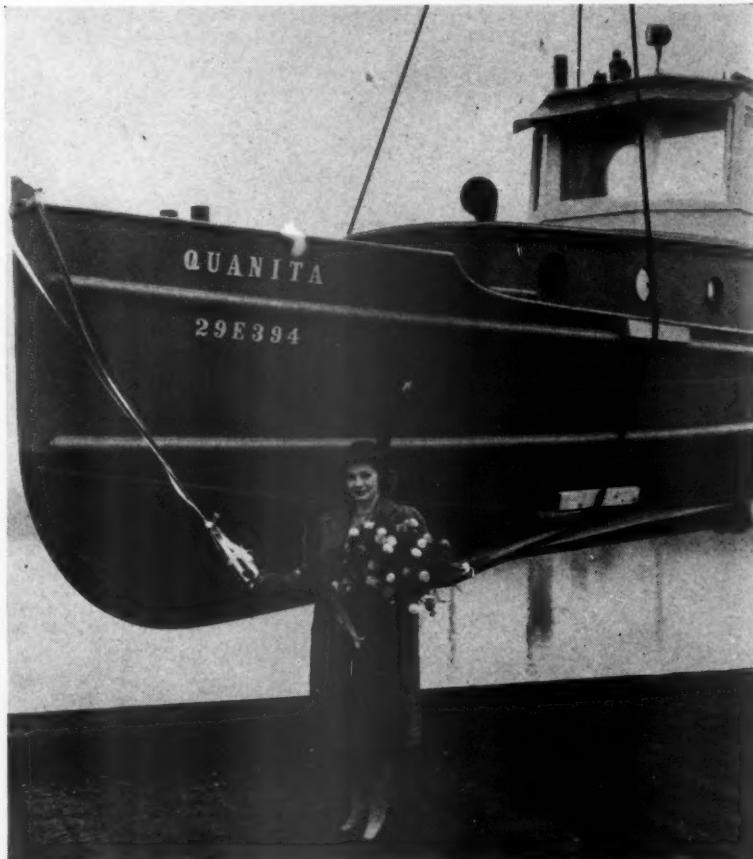
cal and financial circles who came with the company in 1896 and advanced through minor positions to the office of secretary and treasurer, which he has held since 1921, was elected vice president and treasurer. Warner R. Over, formerly assistant secretary and assistant treasurer, was elected secretary and assistant treasurer.

The Pennsylvania Salt Manufacturing Company, founded in 1850, is one of the oldest manufacturers of chemicals in the country and is one of the largest producers of chlorine and caustic soda. Beginning with the manufacture of heavy chemicals from salt, this company has expanded its field until today its products are used in many industries. Pennsalt is well known in the paper pulp field as manufacturers of alum, soda ash, acid-proof cement, sodium aluminate, ammonia, and bleaching powder.

Resume First Aid Classes at Camas

• First-aid classes were resumed at the Crown Willamette Paper Company, Division of Crown Zellerbach Corporation at Camas, Washington, about the first of October. During the first two weeks there was an attendance of 41 women and 179 men, of which 20 are sub-foremen.

This is the largest first-aid class enrollment of the Crown Willamette Paper Company.



"Quanita," the Hawley Pulp & Paper Company's new tugboat, was christened by Miss Clarice G. Pershing, cousin of General Pershing and niece of MRS. CARL E. BRAUN, wife of the Vice President and Mill Manager of the Hawley organization.

TOTALS FLOW AS A CASH REGISTER TOTALS DOLLARS



06408

"A"—This automatic planimeter pen record shows steam flow in volume units and the time at which it was produced or used in any part of the 24-hour period, enabling you to easily analyze steam production and distribution.

"B"—This record line shows rate of flow and enables the operator to maintain the most efficient boiler operation, thus effecting substantial fuel savings.



Steam IS money. Wasting steam boosts overhead—eats up income—shrinks profits. Steam accounting is serious business—it needs business methods.

As a modern cash register guards a store-keeper's dollars—producing a printed record of each transaction—so flow meters should guard your power and process steam.

With Brown Flow Meters measuring the flow of fluids for power, heating and processing, you are completely protected—because

The Brown Automatic Recording Planimeter Pen, "A," making the marginal record shown on the chart pictured supplies the PROOF that a definite number of pounds of steam, gallons of water, cubic feet of gas, or barrels of oil, were delivered, utilized—or wasted.

This is a special, patented feature of the greatest value to flow meter users. Reference to the automatic planimeter pen record on chart rim assists you to distribute departmental or process loads more uniformly over the working day, effecting substantial fuel savings not only in the boiler room but in every department or unit where steam is used.

In addition, Brown Flow Meters offer you other advantages such as:

Six inter-related range tubes with inter-related direct reading charts.

Meter Bodies for working pressures up to 2500 lbs.

Integrator dial—easy to read—insures highly accurate totalizing at all rates of flow from 0-100%.

Universal case permits any style panel mounting—flush on panel, front-of-board or on wall.

Indicating, Recording and Controlling models—Electrical, Mechanical and Area types for all applications.

Get all the facts about Brown Flow Meters. Features are fully explained in Catalog No. 2007. Send for your copy. THE BROWN INSTRUMENT COMPANY, a division of Minneapolis-Honeywell Regulator Co., 4438 Wayne Avenue, Philadelphia, Pa. Offices in all principal cities. Pacific Coast Sales Offices: 420 S. San Pedro St., Los Angeles—1136 Howard St., San Francisco—303 Selling Building, Portland—403 Terminal Sales Building, Seattle.

BROWN Flow Meters

Accurate Measurement with Simplicity

Sixteenth Census of the
United States: 1940
(Preliminary report)

DEPARTMENT OF COMMERCE
BUREAU OF THE CENSUS
WASHINGTON

October 24, 1940
Industry No. 711

CENSUS OF MANUFACTURES: 1939

Pulp Mills

Manufacturers of pulp reported slight decreases in employment, wages, and value of products for 1939 as compared with 1937, according to preliminary figures compiled from returns of the Census of Manufactures for 1939 and released today by Director William Lane Austin, Bureau of the Census, Department of Commerce.

This industry, as constituted for census purposes, embraces establishments primarily engaged in the manufacture of pulp from wood and other fiber.

The value of products for this industry for 1939 amounted to \$226,851,822, a decrease of 8.2 percent compared with \$247,191,957 reported for 1937. However, the total production of pulp in 1939 was 7,153,478 tons, an increase of 6.6 percent compared with 6,713,576 tons for 1937.

The 1939 Census of Manufactures is the first census for which employees who were primarily engaged in distribution, construction, etc., activities have been called for separately on the schedules. It is not known how many of the wage earners reported for 1937 were engaged in distribution and construction and how many were engaged in manufacturing. Employees of the plants reported as engaged in distribution and construction activities in 1939 are not included in this preliminary report but will be included in the final report.

The wage earners primarily engaged in manufacturing in this industry in 1939 numbered 26,870, a decrease of 0.5 percent compared with 26,994 reported for 1937, and their wages, \$33,145,835, fell below the 1937 figure, \$33,570,346, by 1.3 percent.

Summary statistics for the industry for 1939 and 1937 are given in Table 1, and detailed production statistics in Table 2. All figures for 1939 are preliminary and subject to revision.

Table 1.—Summary for the Industry: 1939 and 1937

(Because they account for a negligible portion of the national output, plants with annual production valued at less than \$5,000 have been excluded since 1919)

	1939	1937	Percent of increase or decrease (-)
Number of establishments 1/.....	194	194	—
Salaried personnel 2/.....	2,379	2,153	10.5
Salaries 2/ 3/.....	\$5,879,311	\$5,150,655	14.1
Wage earners (average for the year) 4/.....	26,870	26,994	-0.5
Wages 3/ 4/.....	\$33,145,835	\$33,570,346	-1.3
Cost of materials, supplies, fuel, purchased electric energy, and contract work 3/.....	\$144,736,646	\$153,651,946	-5.8
Value of products 3/.....	\$226,851,822	\$247,191,957	-8.2
Value added by manufacture 5/.....	\$82,115,176	\$93,540,011	-12.2

1/ Includes 8 mills for 1939 and 7 for 1937 manufacturing pulp exclusively from materials other than wood.

2/ No data for employees of central administrative offices are included.

3/ Profits or losses cannot be calculated from the census figures because no data are collected for certain expense items, such as interest, rent, depreciation, taxes, insurance, and advertising.

4/ The item for wage earners is an average of the numbers reported for the several months of the year and includes both full-time and part-time workers. The quotient obtained by dividing the amount of wages by the average number of wage earners should not, therefore, be accepted as representing the average wage received by full-time wage earners.

5/ Value of products less cost of materials, supplies, fuel, purchased electric energy, and contract work.

DU PONT SAFRANINE T EXTRA



A WELL-ESTABLISHED PRODUCT IN THE PAPER INDUSTRY

THE high tinctorial power and brilliancy of Du Pont Safranine T Extra have contributed to its popularity in the production of bright pink and red shades for wrapping, tissue and other medium grade papers.

This color also finds wide use in pink blottings, as it works well on unsized bleached rag without the aid of alum as a mordant.

Du Pont Safranine T Extra is suitable for calender coloring and dipping, has very good solubility, does not bleed, but has a slight graniting effect.

Paper mills using Du Pont Safranine T Extra have learned to depend upon product uniformity. Du Pont manufacturing methods governed by careful chemical control have assured the user of consistently uniform materials.



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Table 2.—Products, by Kind, Quantity, and Value: 1939 and 1937

	1939		1937	
	Short tons	Value (f.o.b.mill)	Short tons	Value (f.o.b.mill)
Pulp Mills industry, all products, total value.....	—	\$226,851,822	—	\$247,191,957
Pulp (wood and other fiber)...	7,153,478	222,812,085	6,713,576	242,443,451
Other products (not classified in this industry).....	—	4,039,737	—	4,748,506
Wood pulp, total.....	6,993,334	209,061,107	6,572,918	225,573,125
Mechanical, total.....	1,444,875	27,710,170	1,600,667	30,315,251
Not steamed.....	1,342,643	25,379,398	1,513,047	28,281,135
Steamed.....	102,232	2,330,772	87,620	2,034,116
Sulphite fiber, total.....	1,946,452	86,043,861	2,140,244	109,920,115
Unbleached.....	729,203	24,736,494	791,575	30,718,426
Bleached 1/.....	1,217,249	61,307,367	1,348,669	79,201,689
Sulphate fiber, total.....	2,962,657	72,939,469	2,139,087	59,437,736
Unbleached.....	2,538,204	55,242,263	1,923,937	51,096,623
Bleached.....	424,453	17,697,206	215,150	8,341,113
Soda fiber, bleached.....	441,565	19,710,156	2/507,548	2/23,465,719
Semichemical and other wood pulp.....	151,658	2,105,267	132,521	1,748,316
Screenings, mechanical and chemical 3/.....	46,127	552,184	52,851	685,988
Other pulp 4/.....	160,144	13,750,978	140,658	16,870,326

1/ Includes data for "Superpurified" and "Rayon and special grades" to avoid disclosing figures for individual establishments for 1939. For 1937: "Superpurified" and "Rayon and special grades" combined, amounted to 353,640 tons, valued at \$23,871,039.

2/ "Unbleached" and "bleached."

3/ Combined to avoid disclosing data for individual establishments for 1939. For 1937: Mechanical, 9,674 tons, valued at \$69,667; chemical, 43,177 tons, valued at \$616,321.

4/ Principally pulp made from cottonseed-hull fiber, cotton-linters, rag, reclaimed paper, and straw.

Fernstrom Employees Hold Picnic

The entire plant and office staff and their families and friends, totaling close to 500 people, of the Fernstrom Paper Mills, Inc., of Pomona, Calif., enjoyed the company's second annual Labor Day picnic, Sept. 2. The event held at Los Serranos Country Club, Chino, Calif., comprised a day of sports, contests, entertainment, dancing and a dinner at noon. The day's activities were handled by a committee headed by W. P. Hoag, general chairman, assisted by B. P. Duke.

J. W. Genuit, master of ceremonies, introduced Charles G. Frampton, superintendent, who stressed in his talk the need for thought and care on the part of every employee to help the company make progress in spite of the uncertain conditions existing today. W. P. Hoag, president of Local 318 I. B. P. M., expressed the appreciation of all to the company for sponsoring the picnic. J.

E. Maurer told of the progress made by the Paper Mill Employees Federal Credit Union, pointing out it now has 151 members and approximately \$5,000 in deposits, acquired since its inception in January this year. F. O. Fernstrom, president of the company was absent due to illness.

Sports activities and contests were under the direction of the Paper Mill Athletic Club, headed by Charley Preston. The organization donated the prizes for the various events.

Golf winners in the tournament were Maynard Murphy, first prize, Walter Genuit, second, and Marshall Moss, third. Wayne Simpson won the horseshoe pitching contest, Homer Pattie the quiz contest, and Hilda Richardson the clothespin contest. Horseback riding and swimming were among other sports enjoyed by the group. Jim Jack, an employee of the mill, headed a Scottish bagpipe band, which, dressed in traditional Highland costume, entertained

the company at dinner. Final event of the day was the dancing contest in the evening which was won by Mr. and Mrs. Hollis Foster.

Weyerhaeuser Men Get Their Deer

Spending a week in Eastern Washington Carl Ries and Frank Potter of the Everett Mill, Pulp Division, Weyerhaeuser Timber Co., had a successful vacation hunting. Ries brought down a 150-pound buck and Potter got a big 300-pounder. Potter's deer, though hit hard, managed to "take to the hills." Ries, however, was able to follow the very faint trail over rocks until the wounded deer was found.

Jack Dugger, machine tender, brought down a 150-pound buck on Camano Island. When coming on shift he treated his crew to some very excellent steaks. He was accompanied by Milton Harnden and Bud Wiese, also from the machine room. Both were lucky in getting a deer apiece.



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ARMON FRAHM, Everett Mill, Pulp Division Weyerhaeuser Timber Company, with the deer he "bulldogged" for his hunting companion **BARNEY WRIGHT**, also of the Weyerhaeuser mill.

Frahm Bulldogs a Deer

• Armon Frahm and Barney Wright, Everett Mill, Pulp Division, Weyerhaeuser Timber Co., have a new technique in deer hunting. They were hunting up near Granite Falls when Wright saw his deer. Taking a quick shot he slightly wounded the animal which still had strength enough to run down a side hill, with Frahm close behind. Making a flying tackle Frahm grabbed the deer by the horns and managed to throw it to the ground. He was able to hold it until Wright came up to finish it off.

Fletcher Transferred to San Francisco

• R. E. Fletcher of the converting plant office of Crown Willamette Paper Co., Division of Crown Zellerbach Corp., Camas, Wn., has been transferred to the San Francisco office of Crown Zellerbach Corp., where he will work in the Order Department.

Sprague Yeager of the sample department has taken over Mr. Fletcher's work at Camas.

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